ECHNOLOGY DEPT.

NATIONAL PETROLEUM NEWS

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Volume 34 | March 4, 1942 | Number 9

Standard Steel Works

BULLETINS

GASOLINE RATIONING

WASHINGTON — If and when gasoline is rationed, Office of Price Administration is going to be ready, down to the last detail, it was learned today from a source close to Price Administrator Henderson, who said administrative details are being worked out on a gasoline coupon plan.

BARECO PLANT RUNNING

HOUSTON—Bareco refinery at Corpus Christi is not shutdown, according to company officials who classed as "erroneous" reports that the plant had been closed because lack of tanker transportation had bottled up products (see earlier story, page 17).

CRUDE PURCHASES CUT

HOUSTON—Effective March 3, Texas Co. reduced purchase of crude from its own wells in New Mexico and parts of Texas and Louisiana.

Move was made because of stock accumulations, President W. S. S. Rodgers said.

Texaco's purchases in New Mexico, west Texas, 20 fields in Texas Gulf Coast and 26 fields in south Louisiana were cut to 50% of authorized allowable.

Republic Oil Refining Co., as of March 1, reduced its purchases 50% in 5 southwest Texas areas. *(See earlier story p. 17 this issue).*

Mid-West Fuel Rushed to East At Heavy Cost

NEW YORK — Faced with only a few days' supply of fuel oils, eastern oil companies pooled their inventories, rushed in record-breaking volume by tank car, sold Mid-Continent fuels in many cases below cost of the freight—and no home owner or distributor has been without supplies. Tank cars are being relieved—as many as 20 of them in some cases—by a single transport truck on short hauls in congested areas. Extra cost is amounting to many millions, and the oil companies are absorbing every cent because of OPA's price schedule. Page 3.

ODT-WPB Handling Truck Ration Plan

WASHINGTON — Rationing of trucks and trailers, scheduled to start March 9, will be handled jointly by Office of Defense Transportation and War Production Board. Classification of oil industry trucks still not clear. Page 21.

7-TO-7 RECOMMENDED

WASHINGTON — Petroleum Industry War Council today recommended 7-to-7 station closing throughout the U. S.

Tires Give Extra Miles If Properly Balanced

Wheel balancing will add up to 30% more miles to the life of tires. NPN's article on tire conservation this week takes up this service. Theory of wheel balancing and spotting of unbalanced wheels is explained. Page 23.

NEWS BRIEFS

OPC's Refining Director Gary revamps refining division. Page 3.

* * *

Schedule 88, as amended, setting maximum oil prices, goes into effect. Page 8.

* * *

Some refiners expect octane rating to get another push downward. Page 17.

* * *

OPC cites need for large-scale isomerization program. Page 17.

* * *

Mississippi crude tax hike passes Senate; House still to act. Page 19.

* * *

Texas Commission pushes salt water program ahead to March 1. Page 19.

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California refiners ship by tank car to Northwest. Page 21.

* * *

Pennsylvania turnpike is opened to oil truckers. Page 22.

* * *

Mississippi delays passage of oil conservation bill. Page 18.

Gulf Refiners Cut Crude Oil Takings

HOUSTON—Gulf Coast refiners' stocks pile up as enemy subs destroy tankers. Several companies announce reduced purchases of crude; one refiner shuts down. Another refiner questions method of permitting price increases. Page 17.

Knowlton Explains M-68's 'Soundness'

WASHINGTON—OPC's Production Director Knowlton, in speech prepared for Dallas meeting of A.P.I. Production Division, explains necessity for M-68; forecasts drilling and production requirements in wartime. Page 19.

More Oil Men Hit Muddled OPA Order

CLEVELAND — Oil jobbers are joining in protests against Office of Price Administration's maximum price regulations as more and more oil men voice irritation over confusion of Price Schedule 88. Page 8.

OPA Reorganized

WASHINGTON — Price Administrator Henderson plans to reorganize OPA and may appoint an oil man to head up oil price section. Pages 5 and 6

— REFINING TECHNOLOGY EDITION —

Gasoline Octane Should Not Fall Below 72—S.A.E.

A drop in octane rating of regular-grade gasoline to 65 would cause problems of major seriousness for passenger cars, trucks and busses, report of S.A.E. War Engineering Board gasoline subcommittee indicates. According to the report, one-half of the passenger cars require better than 70-octane gasoline; one-fourth of the passenger cars and a large proportion of trucks need 75-octane gasoline. Page R-78.

A.I.M.E. Hears Talk On Standardization Of Refinery Design

Standardized design of processes and equipment for wartime refinery operation was discussed by James Thornton before the annual meeting of American Institute of Mining and Metallurgical Engineers. OPC Refining Director Gary spoke on 100-octane gasoline processes and said that after the war, expanded air transportation and high compression car engines would keep 100-octane plants busy. Page R-67.

Engineer Discusses Pipeline Economics In A.I.M.E. Paper

The economics of operating long petroleum pipelines is discussed before the American Institute of Mining and Metallurgical Engineers in a paper prepared by Edgar G. Hill. He presents formulas for calculating the rate of crude oil flow in a pipeline. Mr. Hill discusses what the defense pipeline, proposed last year, from East Texas to New York would accomplish and the theoretical cost of moving oil through it. Page R-74.

MARKETS

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MERCHANDISING

"Thumbs Up" Attitude Characterizes Missouri Jobbers' Wartime Operations 28

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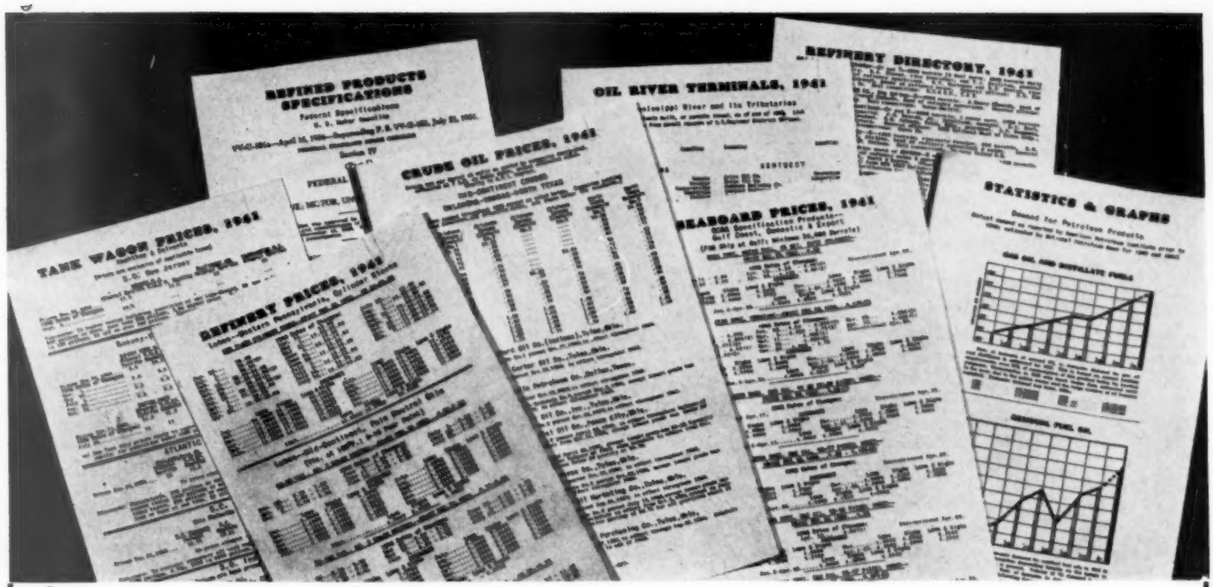

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NATIONAL PETROLEUM NEWS—March 4, 1942—Vol. XXXIV—No. 9
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O. H. Bakhaus

Hobby of Kentucky Jobbers' President? Only One Guess . . . That's Right---Horses

Kentucky Petroleum Marketers Assn. on Feb. 11, elevated O. H. Bakhaus, Lexington, from first vice-president to president of that organization.

Very few oil men in the state of the most beautiful ladies, the finest thoroughbred horses and the "kickenest" mint juleps, ever heard of Mr. Bakhaus.

But if you mention "Bake" that's another story. For if there is a major oil company or independent jobber down Kentucky way that hasn't had some dealings with "Bake," it just started in business.

And some of these competitors who tried to outsmart this diminutive oil jobber perhaps wish they had never heard of him. Maybe it's that little motto on his desk:

"IF YOU AIN'T ON YOUR TOES YOU'RE ON YOUR NOSE"

For nothing is going to upset this jobber's timetable—including such things as wars. Oil jobbers who start with less than nothing and build up a better than 5,000,000-gal. business in 6 years, are bound to have something on the ball other than Kentucky red clay.

So with "Bake" at the helm, it looks like a big year. And with his partner, "Dud" Burke, partner of Bakhaus in the Ky. Independent Oil Co., Sinclair Distributors, at the head of the jobber division of K. P. M. A., things look even brighter in the old Kentucky homes of oil men.

It was "Bake's" partner, Dudley Burke, it will be recalled (NPN, Sept. 4, 1940, p. 25) who made socks more than accessories, luxuries or necessities, according to one's point of view. He introduced the style of always wearing mismated pairs—for luck. And it worked for him!

"Bake" was born in Okemah, Indian Territory (Okla.), where he must have soaked in some of the then undiscovered oil in that region. For his first job after graduating from the University of Oklahoma, after roaming around a bit in the southwest, was with a major oil company in Covington, Ky. During 7 years as a salesman, agent and other positions, he set and broke records with that company with clock-like regularity. But he wanted to be "in for himself"; found that one of his best friends, "Burke" had the same notion. So they moved to Lexington and started in the jobbing business on the remnants of their two semi-monthly pay checks.

Personally "Bake" will tell you he doesn't go in much for social affairs. But you will notice that he fingers a Sigma Alpha Epsilon key dangling from his watch chain. If he likes you, he will invite you to the Lexington Country Club "Ashland", of which he has long been a member, or perhaps to an Optimist Club luncheon. And he will introduce you to all the "brass hats" around Lexington, and there are plenty, with whom he works in various civic affairs.

And just in case Oklahoma might claim this aggressive young jobber, it might be pointed out that he is now a "native of Kentucky" by reason of his hobby—raising horses. He sports a stable of 3 five-gaited thoroughbreds. Both he and Mrs. Bakhaus, who was born in Kentucky, are enthusiastic equestrians.

NATIONAL PETROLEUM NEWS

VOLUME 34 WEDNESDAY, MARCH 4, 1942 NUMBER 9

Refining Division Of OPC Revamped By Director Gary

NPN News Bureau

WASHINGTON, Mar. 3.—Chart showing how Office of Petroleum Co-ordinator's refining division has been reorganized by its director, Wright W. Gary, is expected to be ready within next week.

Meanwhile, it's understood following men have been appointed to head these 5 sections:

Process Development—Cary R. Wagner, formerly director of research and development for Pure. This section will have charge of all refinery development problems including study of new 100-octane gasoline processes, storage stability, catalytic requirements, process licensing, effects of rubber shortage on gasoline, octane and lead susceptibility and changes in all petroleum specifications, domestic and Lend-Lease. Mr. Wagner will also be OPC's representative on Patent Secrecy Board.

Equipment—Max B. Miller, president of Max B. Miller Co. This section will have charge of all refinery engineering developments.

Facilities—George Parkhurst, former assistant director of development for Indiana Standard. This section will negotiate contracts for 100-octane construction. Bruce K. Brown, on leave from Indiana Standard where he was general manager, is assigned to this section. Mr. Brown has been with OPC several months as an aviation gasoline consultant.

Operations — Douglas P. Bailey, chemical engineer, Texaco. This section will handle all manufacturing problems.

Supplies—Robert B. Cragin, up to now OPC's assistant director of refining. This section, it was explained, is in some respects similar to an oil company's sales division, but much broader in scope and minus the competitive spirit. P. M. Robinson, also an assistant OPC refining director, is special assistant to Mr. Gary and presumably will operate as an ambassador-at-large.

7-to-7 May Force War Plants To Sell Gasoline to Workers

NPN News Bureau

CLEVELAND, Mar. 3 — Defense plants running 24 hours a day on war orders will probably put in their own tanks and pumps to sell gasoline to their employes, if the oil industry goes ahead with the 7-to-7 plan for closing service stations, according to Russel S. Williams, Indianapolis, of Bonded Oil & Gas.

These defense plants, said Mr. Williams, cannot take a chance that even one automobile load of night-shift workers will get stalled on the road for lack of gasoline.

One large airplane engine plant in the Mid-West has already stated its intentions of installing equipment and selling gasoline to its workers, if the night-closing plan is adopted, said Mr. Williams.

'Industry Has Gone Nuts'

Mr. Williams, a member of District 2 Marketing Committee, signed a minority report when that committee recently voted to ask that the Petroleum Co-ordinator recommend the 7-to-7 plan to the industry.

"The oil industry has gone completely nuts, encouraging and even inviting regimentation—when it is not necessary for the war effort," Mr. Williams commented bitterly today over long-distance telephone to NPN.

"This 7-to-7 idea is not a defense move. It's just a step to mob rule, wrapped up in the American flag," he added. He pointed to instances of violence in some cities where dealer groups had attempted to "persuade" all station operators to close nightly.

Major companies backing the 7-to-7 plan, said the Indianapolis independent marketer, are aiming at one-man operation of stations. And that would destroy the industry's record of service to the public.

"Here we have gasoline stocks mounting rapidly, due to transportation difficulties," Mr. Williams continued. "And all

(*Continued on page* 12)

Companies Rush Aid In East's Fuel Crisis

NPN News Bureau

NEW YORK, Mar. 2—Heating oil inventories of all primary suppliers, combined, in the New York area amounted to less than a week's supply on Feb. 27—yet no home was without fuel, no distributor without supplies.

Critical fuel oil situation on East Coast was brought about by the sinking of nearly 30 tankers in the Atlantic during the past three months and diversion of others to military service.

Oil industry's record in meeting the situation was remarkable. It was accomplished by the wholehearted co-operation of fuel oil suppliers. Unstintingly, the supplies and distribution committee, headed by S. B. Eckert (Sunoco), worked day and night in pooling supplies and prorating them among marketers.

Every Case Taken Care Of

By end of the week, W. L. Kallman, subcommittee's executive secretary, was able to announce that every case of a jobber or distributor—proved to be without supplies—had been taken care of.

It cost the eastern oil companies millions of dollars in added transportation costs. Tank cars of heavy and light fuels rolled into eastern terminals from as far as Oklahoma and Texas. Sale prices — pegged down by Price Administrator Henderson — were sometimes less than the freight charges. In other words, the companies were giving away the fuel oil and paying part of the transportation, too. Those were exceptional cases. But it is safe to say that virtually every gallon of fuel oil brought in by rail—and most of that arriving by tanker—was sold at less than cost.

OPA's eastern seaboard prices were pegged at levels based on peacetime tanker costs. And rail freight is several times that. Tanker costs, too, have risen sharply under wartime conditions—war risk insurance, crew bonuses, etc., paid by the boat owner and a 37.5% surcharge on rates paid by the charterer.

$200,000,000 in Added Costs

It is estimated that eastern oil companies are absorbing added transportation costs at the rate of nearly $200,000,000 a year, so long as they have to sell at OPA's present price schedules. Late in December, OPA authorized an advance of 0.3c in gasoline prices on the eastern seaboard but that was

(*Continued on page* 4)

WPB Cites Gains By Use of Trucks For Short Hauls

NPN News Bureau

WASHINGTON, March 2.—Efficiency of trucks in replacing tank cars on short hauls is "illustrated dramatically" in the case of hauls from one refinery on the East Coast, War Production Board said today in officially announcing its release of "frozen" truck tanks, chassis and trailers on Feb. 17 (*NPN Feb. 25, p. 14*).

Deliveries from this refinery to a ship-building yard 1 mile away, WPB said, "tied up tank cars for 4 days. On this run, one 4000-gal. truck will replace 15 cars."

Citing another instance, WPB said that on a 14-mile haul, eight 5000-gal. truck trailers will replace 70 tank cars in 7-day turn-around.

"On another run, five 6000-gal. tank trucks will replace 50 tank cars," according to WPB.

The release of "frozen" tank trucks was authorized by WPB's director of industry operations, J. S. Knowlson, in wires to more than 70 manufacturers of equipment for petroleum transportation. His wires gave the manufacturers "authority to release all tank vehicles for transportation of petroleum products, including bodies, trailers and chassis frozen under Order L-1-c. This applies only to trucks, tractors, bodies or trailers intended for haulage of petroleum products."

Companies Rush Aid In East's Fuel Crisis

(*Continued from page* 3)

to compensate for added costs of transportation last year.

Differential between normal tanker costs and cost of using tank cars, barges, trucks and pipelines—because of insufficient tanker facilities—is estimated now to be at rate of about $100,000,000 a year. In addition, wartime tanker costs have gone up at rate of nearly $100,000,000 a year.

Price Advances Needed

Some oil men believe that it would require an advance of at least 0.5c per gallon in eastern gasoline prices—in addition to the 0.3c increase granted by OPA—to offset added transportation costs on this product during 1942. An increase of about 0.5c is also needed in light fuel prices, they say. And still higher prices may be needed, if the tanker situation becomes worse, forcing an even greater use of tank cars and other higher-cost overland transportation.

As for heavy fuels—some marketers believe that a 50c per barrel increase may be ultimately needed to compensate added transportation costs. However, a 20c advance "might" take care of the situation now, while there are still some tankers available to offset the long-haul rail costs in the overall average. But the overall average will continue to climb as more and more tank cars are used.

'Gas' Rationing Prospects Cited

There is plenty of gasoline on the Atlantic seaboard for present consumption. But "clean" tankers are being put into "dirty" service and all tank cars possible are being used to haul fuels to the East Coast. Result is that gasoline inventories cannot be built up fast enough for the summer season. So, gasoline rationing may come—not because of a present scarcity, but to conserve inventories for high-consuming season ahead.

Situation Called 'Desperate'

Combined inventories of New York Harbor primary suppliers amounted to less than 10 days' supply for kerosine and heavy fuels and less than 6 days' for heating oils (No. 2 fuels) at end of last week. So skillfully did the supplies-distribution committee parcel out deliveries, no distributors were short. However, the situation was considered "desperate" with the possibility that a severe cold snap would drain tank bottoms. So, the committee sent out an SOS to refiners all over the Mid-West and Mid-Continent asking for offers of fuels in shipper's cars.

5000 Cars Offered to East

Down to New York at end of the week came a delegation of western refiners. They brought offers from 43 refiners totaling approximately 5000 cars. A tabulation of these offers, with quantities and prices, was circulated among eastern fuel oil marketers.

In an accompanying letter, Chairman Eckert said that where the prospective buyer lacked tank car unloading facilities, the committee would arrange for terminaling at no cost. All buying negotiations were to be handled directly with the seller.

Gasoline Offered Also

Some western refiners wanted the eastern companies also to buy equal quantities of 50-octane gasoline. But the eastern suppliers said they had plenty of gasoline at present.

It's no secret that some eastern companies would have preferred to "borrow" the western refiners' tank cars and bring up the needed products from their own refineries in the Southwest. But speed was the dominant factor.

28,000 Tank Cars Hauling East

Movement of crude and products from the Mid-West and Mid-Continent has been gaining each week. For week ended Feb. 21, incoming rail shipments to East Coast averaged 326,000 bbls. daily (last week it probably was even higher). Mostly it was crude oil from Mississippi and Illinois fields, and from pipeline and barge terminals all over the Mid-West. But there was a considerable volume of crude oil and products from Oklahoma, Louisiana, Texas and other southwestern areas.

It is estimated that each tank car added to this West-East service adds 15 bbls. daily to the supply line. Each tanker, on the average, accounts for about 4000 bbls. daily. So the 326,000 bbls. arriving daily by tank car is the equivalent of about 81 tankers.

And this does not count in the trainload-a-day record last week on the Pacific Coast. (*See page* 21—*Ed*).

Trucks Do Their Part

Transport tank trucks are really coming into their own, replacing tank cars on short hauls in many sections.

All "economic" reasons for using tank cars instead of trucks on short hauls—such as reciprocity deals, railroad-owned bulk plant sites, etc.—have gone by the boards. Result is that in some sections trucks are hauling off of pipeline terminals and in other short runs where the rails formerly were used.

In some areas, it was found that a single transport truck could replace 10 or more tank cars—sometimes as many as 20 cars. This has turned loose hundreds of cars for long hauls. Speeded-up loading and unloading is another factor. Also, the railroads have surprised the oil companies with speedier service.

More Trucks to Be Used

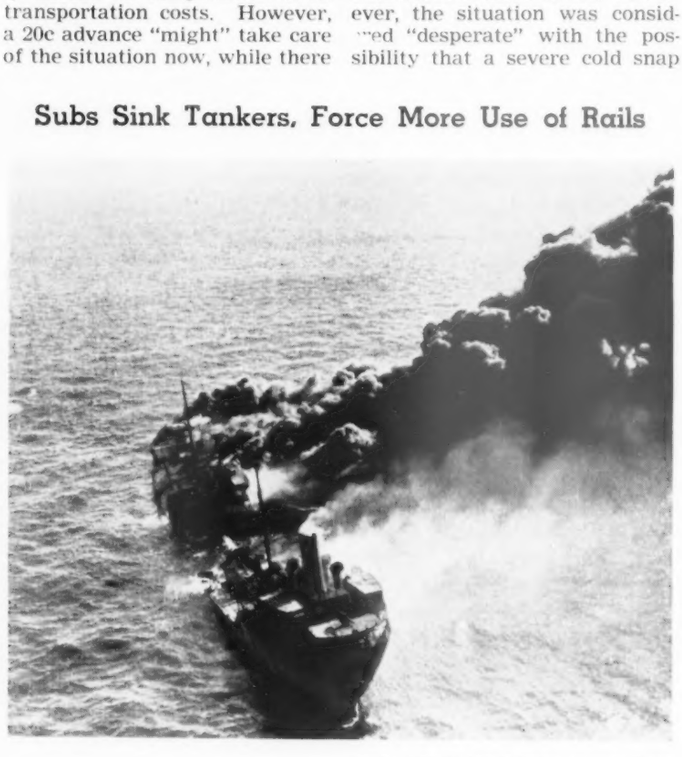
Some eastern oil traffic men, who have seen results of these all-out efforts, believe "only the surface has been scratched yet" in replacing tank cars with trucks.

Sitting in with the supplies and distribution committee last week was Karl Eisenhardt York, Pa., of Coastal Tank Lines, who is chairman of the Petroleum Transporters' Conference, American Trucking Assn., Inc., Eastern Seaboard Division.

Mr. Eisenhardt was assured of the oil companies' complete co-operation in putting trucks into service wherever they could replace tank cars. It was suggested that oil truckers study operations throughout the Atlantic Coast territory. Whenever they note an instance of where trucks could replace rail service, they are to communicate immediately with the oil company's headquarters.

Some eastern oil executives are still inclined to regard the "economic limit" of truck transportation at something under 100 miles. Yet there are dozens of petroleum transporters in the Southeast whose trucks are regularly hauling 200, 300 and even 400 miles, one way. In the Mid-West and West Coast, there are even longer truck hauls. When these oil executives become aware that these longer hauls are feasible, hundreds—even thousands—of additional tank cars can be released for cross-country hauls, some oil truckers believe.

Subs Sink Tankers, Force More Use of Rails



—U. S. Army Air Corps—Acme Photo

Another tanker, the "R. P. Resor" (New Jersey Standard), is torpedoed only 18 miles off the New Jersey coast. Flames and smoke from burning cargo could be plainly seen by watchers on shore as ship drifted helplessly. This boat, attacked Feb. 26, was the 25th tanker to fall victim to enemy torpedoes since U. S. entered the war, according to Acme cutline. Tanker sinkings and diversions to military uses have disrupted East Coast's normal transportation of oil from the Gulf

New York Oil Marketers To Meet March 12

NPN News Bureau

CLEVELAND, March 2.—Empire State Petroleum Assn.'s first annual meeting will be held March 12 at the Onondaga Hotel, Syracuse, N. Y., with following as speakers:

Carroll F. Mealey, New York's director of motor vehicles; E. E. Overton, Washington, representing Dr. John W. Frey, Office of Petroleum Co-ordinator's marketing director; and Warren C. Platt, editor-publisher of NPN.

The association, formed Nov. 25, 1941, has as its objectives the promotion of the interests of the jobber, chain operator, distributor and commission agent in petroleum products in New York.

NPN Reports from

WASHINGTON

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Henderson Plans Reorganization of OPA, He Tells Petroleum War Council Meeting

By Teletype

WASHINGTON, Mar. 3. — While Price Administrator Henderson was outlining his plans for wartime reorganization of Office of Price Administration today before the fourth monthly meeting of the Petroleum Industry War Council, newspaper boys were shouting: "Germans sink destroyer off New Jersey coast." War was responsible for both of these events and industry members present sensed the tension.

With many decisions to be made on a full agenda ranging from scheduled appearance of Petroleum Co-ordinator Ickes to general discussions on rationing, 7 to 7 closing, price ceiling and priority orders, synthetic rubber and toluene and many other topics, P.I.W.C. members were in a mood that would have heartened War Production Board Chairman Nelson whose radio speech last night was tuned to a "We can, we will and we must" get more done today.

Anti-Trust Clearance

And to get more done today, P.I.W.C.'s committee on petroleum economics recommended in a 6-page report that "some more definite and positive relaxation of the anti-trust laws appears necessary. The present practice of obtaining clearance letters from the Attorney General appears both cumbersome and inadequate to facilitate what needs to be done to meet war needs." This committee is headed by Dr. R. E. Wilson, president of Pan American.

On matter of OPA's reorganization, Mr. Henderson told P.I.W.C. that he would have 7 administrators directly under him and that one of them would head a realigned fuel section, a step he accepted as necessary to aid the oil industry. Just exactly how this new fuel section will operate could not be learned at a late hour today, but Mr. Henderson did say there will be a greatly enlarged staff.

Moreover, Mr. Henderson is going to "draft" certain oil men to comprise a panel of industrial advisors, and as he spoke he looked at the oil executives grouped around the mahogany table in the Secretary of the Interior's conference room, and said: "I have my eyes on some of you." (Presumably, he meant that some P.I.W.C. members will be asked to devote a large portion of their time to working with OPA on oil prices and other industry matters.)

A revision of Price Schedule No. 88 is under consideration, the Price Administrator said, but apparently did not indicate just what parts of it would get the "axe", however, he did say that many of the "bugs" would be eliminated.

Moreover, OPA is considering a hike in fuel oil prices along the East Coast he said but it's not known when this advance is to be announced.

On cost of moving crude and its products to East Coast by tank car, W. Alton Jones, chairman of P.I.W.C.'s transportation committee and president of Cities Service, told members it will cost oil industry an extra $115,000,000 during the next year to move oil this way as compared with peacetime tanker transportation costs. At present, it is costing companies about $1,000,000 more a week, he said.

Robert H. Colley, president of Atlantic Refining and chairman of P.I.W.C.'s refining committee, introduced a resolution whereby the petroleum industry would start a training program for technical men, due to the many men lost to other war activity.

Suggestions Asked on P-98

Assistant Deputy Petroleum Co-ordinator Robert E. Allen asked oil men for their suggestions on how to improve P-98. Suggestions must be in by March 10. Meanwhile, War Production Board has extended present version of this order and amendment until March 15. *(See detailed story elsewhere in this issue of NPN.)*

Regarding price control, P.I.W.C.'s report on petroleum economics said:

"The economic necessity for emergency price regulation by the government in order to avoid inflation should be recognized and accepted, but at the same time ingenuity should be exercised to devise non-inflationary incentives where necessary. Methods must also be devised to keep the components of the petroleum price structure flexible to meet promptly the changing needs for products at different times and in different regions, without disturbing the general price level. These collateral considerations, however, should not interfere with the prompt carrying out of the primary objective of meeting essential requirements during the war period as quickly and effectively as possible with minimum expenditure in terms of the physical standards previously specified."

Speaking on need for more iron and steel scrap, George Weymouth, chief of WPB's industrial salvage section, Bureau of Industrial Conservation, and M. R. Singleton, staff member and former president of Valvoline Oil Co., said there is a need this year for about 16,000,000 tons and urged oil companies

Government to Buy Up Tires— Is It Part of Patman Plan?

Whether or not the Office of Price Administration so intends, its "Tire Return Plan" sets the stage for the government to adopt the Patman Plan for channeling all tires sales and servicing through "independent tire dealers". And the Patman Plan would eliminate virtually all service stations from the tire business.

OPA's new plan provides for Defense Supplies Corp., a government-owned corporation, to buy up all but a small percentage of new tires and tubes now held or later acquired by tire manufacturers and mass distributors. And it *requires* the manufacturers and distributors to sell to DSC.

Tire retailers may sell their tires and tubes back to the manufacturer or distributor. And whatever tires the retailers sell back must be turned over to the government-owned corporation. Thus, the government stands to "corner" the entire supply of tires, except those stocks which retailers choose to retain.

The OPA plan also provides that the government-owned corporation will sell the tires and tubes back to the manufacturers and mass distributors, as needed. But the plan, as announced by OPA, gives no details about DSC selling the tires back.

One of the conditions which DSC might attempt to impose on its sale of tires back to manufacturers and distributors would be that these tires be sold only through "independent tire dealers".

So, it appears that the stage is set for putting Congressman Patman's proposal into effect—even though such an intention may be far-removed from OPA's mind at present. *(For text of order see p. 11).*

to make greater collection efforts. Work done by Charles F. Roeser's scrap drive in the southwest received commendation. (*See story p.* 18.)

Among other subjects which P.I.W.C. had on its agenda for afternoon session were reports and resolutions received from trade associations on revisions of M-68-c and P-98, 7 to 7 closing and product rationing. District chairmen were slated to give a review of their past month's activities and all seven P.I.W.C. committees were scheduled to give reports. Petroleum Economics Committee submitted its report at morning session.

The report on product conservation was to be given by B. I. Graves, chairman of subcommittee on product conservation and a vice-president of Tide Water.

ICC Okays 6% Hike In Oil Rail Rates

A general 6% increase in freight rates of rail and water carriers was approved by Interstate Commerce Commission on Mar. 2, considerably below the 10% increase sought by the carriers. No specific effective date was set, it was said, because the increase is "permissive", meaning that the carrier may put it into effect if it wishes.

After reviewing protests presented against increases in rates on petroleum and refined products, ICC said: "We have frequently considered whether rates on petroleum products were too low and in certain cases have prescribed reasonable minimum rates. Except from the Mid-Continent field to territories outside the southwest and on lubricating oil from Pennsylvania, the going rates on petroleum products are generally much below any maximum we have prescribed."

Six per cent increase applies in general to all commodities except "certain basic or raw commodities" which are products of agriculture, live stock and products, low grade products of mines.

Report did not estimate the revenue to be yielded by the increase, but the ICC's staff estimated, on the basis of 1941 traffic, that the increase would bring in about $203,000,000 a year.

Henderson Shakes Up OPA, To Name New Oil Unit Head

By Teletype

WASHINGTON, March 3.—A fuel price division and a rationing division were established today in a major reorganization of Office of Price Administration which included creation of posts for three deputy and six assistant administrators.

Various price sections under former price division were consolidated within four separate divisions including fuel, food and apparel, industrial materials and equipment, and general products—each under an assistant administrator. In addition, a rent division and the rationing division were established. The former will be headed by an assistant administrator and it appeared—though it was not said definitely—that the rationing division likewise would be in charge of an assistant administrator, making the sixth such post.

While an assistant administrator was named for each of the other price divisions, none was named for the fuel division which includes petroleum and hard fuels. Position of George Doffing, price executive of the former fuel section, was not clear.

"All of the new assistant administrators are authorized to make decision respecting maximum price regulations, subject only to review, if necessary, by the administrator or his deputies", Price Administrator Henderson said in announcing the realignment.

Might Name an Oil Man

While Mr. Henderson did not tell petroleum industry war council meeting today who would be named as administrator of fuel section, he agreed with P.I.W.C. members who said that such a man should be thoroughly familiar with the oil price situation. One source was of the opinion that an oil man might be named.

Deputy administrators are John E. Hamm, J. K. Galbraith, and John S. Keir, executive vice-president of Dennison Manufacturing Co., who will act in a temporary capacity until a permanent appointment can be made.

Mr. Hamm, who will be senior deputy administrator, will organize the rationing division which Mr. Henderson said was necessary because of the agency's rationing authority. OPA already has charge of sugar, tire and automobile rationing, and there is a prospect that other commodities will be rationed before the war is over. In fact, Petroleum Co-ordinator Ickes indicated recently that he would be willing to let OPA handle gasoline rationing if that becomes necessary.

Mr. Galbraith, whose title is staff deputy administrator, will represent OPA in its contacts with other agencies, including Office of Petroleum Co-ordinator and will pass upon all policy statements to the public.

No changes were made in the consumer division which is headed by Assistant Administrator Dexter M. Keezer.

Thomas Mitchell Joins OPC

Thomas Mitchell, former Shell and Indiana Standard oil man, started work today in Office of Petroleum Co-ordinator's marketing division. Prior to joining OPC, Mr. Mitchell worked on asphalt price schedules for Office of Price Administration.

Mr. Mitchell worked in several Pacific Coast cities for Shell in the marketing and refining divisions and later for Indiana Standard in the marketing division.

Refinery Operations

(American Petroleum Institute figures in barrels of 42 gallons. Figures are U. S. totals and are on a Bureau of Mines basis. Breakdown by districts will be published in March 12 NPN.)

	Week Ended Feb. 28, '42	Week Ended Feb. 21, '42	Week Ended Mar. 1, '41
Crude runs to stills (Da. avg.)	3,675,000	3,889,000	3,561,000
Gasoline production at refineries including natural blended	12,131,000	12,571,000	11,586,000
Finished & unfinished gasoline stocks	105,635,000	104,312,000	95,646,000
Gas oil & distillate stocks	34,547,000	35,698,000	34,875,000
Residual fuel oil stocks	88,285,000	88,899,000	95,945,000

Independent Tire Dealers Plan Aided by Senate Group

Senate Small Business Committee today recommended that independent tire dealers be given exclusive right to sell tires and tubes and to renew tires.

Opening hearings on plight of tire dealers, committee adopted resolution to this effect, which it forwarded to President Roosevelt, War Production Board Chairman Nelson, War Secretary Stimson, and Navy Secretary Knox with recommendation that they promulgate such orders as may be necessary to direct distribution of tires through independent dealers.

Committee defined independent tire dealer as one whose principal business is made up of tire sales.

Oil Faces Tax Hike In Revenue Program

Treasury Secretary Morgenthau today outlined $7,000,000,000 tax program resting in part upon increased gasoline, pipeline, and lubricating oil taxes. He urged elimination of percentage depletion allowance for oil and gas wells, which would be replaced by a "special depletion allowance" designed to foster exploration.

He gave no other details of the new depletion plan except to say it would be limited to those who actually carry on petroleum exploration. He classed percentage depletion as a "special privilege . . . intolerable in time of war."

Among excise tax proposals he presented to House Ways and Means committee, were: An increase in taxes upon pipeline transportation fror 4½% to 10% of the amount paid; doubling present gasoline tax of 1½c per gal. and increasing from a 4½c to 10c per gal., the tax on lubricating oil.

He proposed a sharp upward revision of individual income taxes, estimating the change would bring in about 60% more revenue. But the two examples he cited of typical incomes showed that next year's individual income tax would be about double the present rate.

Congress Told of Need for Higher Oil Prices

WASHINGTON, Mar. 2. — Straight-from-t h e-shoulder reports on Oil's price problems and how they affect exploration for new reserves and the job of moving large quantities of petroleum and products to the East Coast by rail are now a part of the record of Cole oil investigating subcommittee hearings.

Subcommittee hearings last week brought out: (1) price is an essential factor in encouraging the discovery and development of new reserves and (2) eastern oil companies—operating under price ceilings—are now absorbing in excess of $1,000,000 a week in extra transportation costs.

Said soft-spoken Rep. Clarence F. Lea, Calif., who has been acting as subcommittee chairman in absence of Rep. William P. Cole Jr.:

"It certainly seems that we must have efficient and prompt adjustment of price ceilings affecting these war activities if we are to have efficient management and to encourage aid to the government program."

Chairman Lea's comment came during testimony of Dr. R. E. Wilson, president of Pan American and chairman of Petroleum Industry War Council's standing committee on petroleum economics.

Mr. Wilson testified during the one-day session Feb. 25 that higher costs of transporting oil to the East Coast now amount to over $1,000,000 a week, which eastern oil companies are absorbing because of inability to raise prices above Office of Price Administration's ceilings. This is placing a heavy burden on both large and small companies and a price increase—particularly in heavy fuel oils—is urgently needed, the Pan American president testified.

Davies Cites Price Needs

Question of crude prices came up when Deputy Petroleum Co-ordinator Davies completed his prepared statement before the committee. He was asked how much higher price would increase exploration, and answered that it was an involved question which OPC officials have been studying for some time.

In his prepared testimony, however, Mr. Davies said:

"As the many adjustments required fully to apply the resources of petroleum to the war effort are made, there will be need for price changes in various products at various places, in order properly to recognize in these terms the operating facts and preserve the solvency of the industry. As war conditions require special production practices, changes in refinery balances, the movement of products by different transportation methods, or other, perhaps radical, deviations from what is normal in the business, price adjustments must follow. The responsibility for price resides with the Office of Price Administration, as you know, and the decision on questions of this kind will come from that source. However, it is the purpose of the Office of Petroleum Co-ordinator to follow closely the price problems of the industry, affording Mr. Henderson the benefit of recommendations in relation thereto."

Depletion Discussed

Later, the question of reduced depletion allowances came up, and Mr. Davies referred to OPC's Chief Counsel J. Howard Marshall for the answer.

Mr. Marshall replied that the depletion matter had been discussed by OPC officials, although no definite conclusion was reached. It is certain, however, he said, that anything which tends to deplete the cash resources of the companies actually engaged in exploration for new reserves tends to defer drilling by just that much.

Last week's session of the Cole subcommittee hearings was a follow-up of hearing the previous week when Petroleum

(*Continued on page* 34)

Deputy Co-ordinator and His Staff Testify at Cole Oil Hearing

OPC Refining Director Gary (standing) is introduced to Cole oil committee to answer a question referred to him by Deputy Co-ordinator Davies (seated). Other members of OPC staff are behind Mr. Davies. INSERT: Congressman Wolverton, N. J., one of original members of Cole committee, talks with Mr. Davies in hall outside hearing room

OPA's 'Lowest Low' Price Plan Operates—Still Unexplained

NPN News Bureau

WASHINGTON, March 2.—Schedule 88, as amended, went into effect today with its formula for determining maximum prices for petroleum products, after Office of Price Administration had denied request for deferment of effective date.

Basically, the OPA oil price schedule provides that prices for petroleum products shall not be higher than the "lowest of the low" quotations published in the Oct. 2, 1941 issue of *Platt's Oilgram* and *Chicago Journal of Commerce*, and the Oct. 8, 1941 issue of NATIONAL PETROLEUM NEWS. (*See NPN, Feb. 11, pages 17, 18, 19 for text of Schedule 88 and amendments—Ed.*)

Schedule 88 apparently requires that all contracts must be rewritten, if they provide for charging prices higher than the "lowest of the lows." This would seem to reduce contract prices which are determined by an average or the averages of "high" and "low" quotations in the designated trade journals, as was first pointed out in NPN.

NPN has repeatedly attempted to have OPA officials state precisely what is the effect of Schedule 88 on average contracts, but to no avail. Nearest that any OPA official came to an answer was the comment by Harry R. Booth, chief counsel for OPA's oil unit who said: After March 1, all prices which do not conform to provisions of OPA's Price Schedule 88, as amended, will become subject to maximum price provisions of Price Schedule 88, as amended.

Deferment Denied

By amendment No. 2, effective date of Schedule 88 was put off until March 2, with contract prices permitted to remain in effect until that date.

Notice that no further deferments would be granted by OPA was contained in telegrams Feb. 28 to B. L. Majewski (Deep Rock), Chicago, chairman of the Petroleum Industry War Council's marketing committee, and to J. W. Carnes (Sinclair), New York, chairman of District 1 marketing committee under the OPC.

Text of the telegrams, signed by Price Administrator Henderson, head of OPA's oil unit, as released by OPA today, follows:

"Have taken under consideration your request to again extend operation of Price Schedule 88 as effected by Amendment No. 2 and regret to advise you that we are unable to comply with this request. Representatives of Petroleum Industry War Committee on Feb. 6 agreed that deferment until March 1 would provide adequate time to make adjustment necessary in changing basic price date from Nov. 7 to Oct. 1, as provided for in Schedule 88. Relatively few complaints received from industry with respect to this schedule. Industry advisory committees now under active consideration and will set up shortly. Fuel section will gladly meet at any time with representatives of industry, including war council and marketing committees in respect to problems arising out of Price Schedule 88 and will be available for conferences next week in Washington if desired."

To Set Up Advisory Groups

Mr. Henderson's wire was the first official indication that OPA contemplated appointing advisory groups from the oil industry. It had been reported unofficially that the district marketing committees, set up by Petroleum Co-ordinator Ickes, might be designated as advisory groups to OPA.

Two OPA Officials Discuss Policy At Kansas Oil Marketers' Meeting

WICHITA, Kans., Feb. 28.—Questions on the OPA'S oil price order must be submitted in writing to the Office of Price Administration district offices, where they will be answered by staff attorneys, Jonathan Richards, price executive from the Kansas City district OPA office, told oil marketers at the meeting of the Kansas Oil Men's Assn. Feb. 23 at Wichita.

Following a general talk on "OPA's Attitude in Regard to Price and Marketing Problems", Mr. Richards was asked from the floor to discuss the oil price order specifically. He said oral interpretations could not be given, but that OPA had a staff of lawyers studying the price orders and questions would be answered if sent in.

States Reasons for Price-Fixing

His talk was a support of the government's policy of price fixing as a means for preventing inflation, which would work against full scale production of war equipment for the following principal reasons:

1—The psychology of hoarding materials in uninhibited price advances tends to hold back output of finished goods.

2—Manufacturers cannot set their prices for finished goods if the prices of materials and parts are not controlled.

3—Rising prices create labor unrest, slow-downs in plants and labor unrest among workers. For many items, he said, higher prices could not increase production.

C. M. Linthicum, from the Chicago regional OPA office, took the place on the program of J. H. Salmons, chief of the OPA petroleum unit at Washington, and read the paper prepared by the latter on, "The Oil Industry and Inflation".

"It is a very difficult problem to determine what prices should be controlled and where control should begin," the paper stated. "Large or small, any price increase contributes towards inflation.

"This is not to be understood as stating that we are not going to grant anyone a price increase and that nothing will be done to relieve cases where too rigid a price ceiling would work a hardship on individual concerns in an industry. That is not our policy but we are not going to look favorably upon all requests for price increases."

Asks Marketers to Write

Marketers desiring amendments or adjustments in the oil price schedule were advised to write the Washington OPA office for Precedural Regulations No. 1, which outlines the method for making applications for price changes.

"Retail gasoline prices are not yet formally controlled," the paper stated, "but we have requested that they are to be maintained at the Nov. 7, 1941, level. If this request is not followed, it may become necessary to place a formal ceiling on retail gasoline prices. We hope this won't happen."

Jobbers Join OPA Protest

NPN News Bureau

CLEVELAND, March 2.—"Lil fellers" are joining the chorus of protests throughout the oil industry against policies and methods of Office of Price Administration's fuel section and particularly against its apparent unwillingness to clarify its much-amended but still confusing oil price regulations.

Reports reaching NPN indicate that jobbers are resentful over the curt treatment they are said to have received at hands of OPA's oil unit. Puzzled over meaning of the price-freezing orders, these jobbers wrote in to the price control agency at Washington. In no instance did they get a satisfactory reply. All that some got in reply was a copy of OPA's Procedural Regulation No. 1.

But some major oil companies have fared no better, it seems, even with their high-powered legal talent going down to Washington to talk with OPA officials in person.

One case reported is that of a major company negotiating for a price increase. Present at the conference were OPA's business specialists, economists and lawyers. Suddenly, in the midst of the discussion, an OPA lawyer jumped up, saying "I disagree—the meeting is over". He walked from the room, leaving the conference flat. Question in oil men's minds, who have contacted OPA's oil unit is how a lawyer, supposedly only an advisor, can exercise such arbitrary powers.

OPA Lawyer Denies NPN Story of 'Row'

NPN News Bureau

WASHINGTON, March 2 — Reports that there is dissension within Office of Price Administration's oil unit, with the unit's lawyers allegedly thwarting efforts of the business specialists to provide workable oil price regulations, were put up last week to OPA for comment.

George Doffing, price executive of the oil unit, declined to comment, referring NPN to Harry R. Booth, chief counsel for the unit.

When contacted by NPN, Mr. Booth denied truth of the story and called NPN's news item "unfair" (*NPN, Feb. 25, Page 3*).

THE Editor's PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and publisher, Penton Building, Cleveland, O.

OPA's Bias Promises Serious Trouble For Oil Industry and Country's War Effort

WHAT promises to be one of the worst and greatest messes the oil industry has ever gotten into lies in the price-fixing activities of Leon Henderson's Office of Price Administration.

Not only is the oil industry much confused as to its "legal" prices, particularly in contracts, but it is faced with the prospect of refunding suits running way into the tens of millions, and then, in the future, both the industry and the public are confronted with a price-fixing philosophy emanating from biased and ignorant minds which will retard, if not even prevent, the quick changes in prices which will be necessary if the oil industry has to go universally to every possible means of transportation to offset the continued sinking of tankers.

Henderson's oil price division has been dominated almost from its start by a determined anti-oil and anti-big corporation complex. There are oil men in the liquid fuel division but their recommendations have been overruled by three professorial economists and a lawyer who served on the Illinois Public Utility Commission. All four seem to be strongly impressed with anti-oil and anti-corporation bias like so many of their kind who have made the policies regulating business both in Washington and out.

The rows within OPA over oil prices have been numerous, vigorous and futile so far as oil is concerned. The economists and the utility rate-minded lawyer have won and so far Henderson seems to have backed them up.

IT IS the old story that has figured so prominently in much of "democracy's" politics and particularly in that of the New Deal; the reformers take unto themselves all the virtues, all the honesty, all the wisdom of the world and leave none to anyone else. Anyone in an industry is assumed to be incapable of fair and honest judgment; in fact, one might fairly say that these reformers assume that any industry man always puts profit and his business above God, Home and Country.

That statement is no exaggeration as those who have heard these reformers sound off can tell you. Whoever even questions their judgment is without the sacred patriotic circle in which these reformers move. The writer has heard them many times and he, of course, in voicing criticism is considered as dyed the blackest of the black.

Tanker Sinkings Call Forth Higher Cost Hauling

BUT this oil price situation is far too bad to waste any time calling the price reformers names. The price situation is bad because the tanker situation is bad. Torpedoed tankers, as this is published, probably total around 30. This is far faster than they are being turned out. These heavy losses are slowing down, to say the least, the movement of the tankers that are running.

The oil industry is turning to its other means of transportation: barges, tank cars, trucks and pipelines. More pipelines, however, mean more steel and that is scarce because so badly needed for straight war munitions. The winter has been an open one so barges are being greatly used and more are being built, but they are not numerous enough nor fast enough to make up the gap in our transportation system caused by the tanker sinkings.

Tank cars are today doing the biggest cross-country hauling job since the last war and perhaps even in their history. The industry is studying ways to speed up their movement, to cut loading and unloading time to a minimum and to get the maximum possible use out of tank cars.

EVERY oil man owes it to his country to cut every minute possible off the dead time of every tank car. Regardless of the inconvenience or even cost to himself, every oil man should keep pushing those cars along, even to prodding up railroad yard masters, division superintendents and the crews of the switch engines.

But perhaps the biggest opportunity for developing more transportation IMMEDIATELY lies in marshalling the industry's vast fleet of tank trucks; a fleet that is well distributed over the country, probably for the most part where it will be most needed as transportation conditions become more stringent.

Probably most of this fleet is operating only one "trick" a day of 8 to 10 hours. Only some of the big transports are running 20 to 24 hours a day. In Kansas a week ago it was the opinion of marketing men that, because of gasoline pipelines and shifting in refinery supply, a large part of the transport trucks are running a scant 8 hours a day.

This truck fleet can be organized so as to take over practically all of the short hauls, and a large part of the hauling up to several hundred miles and more from refinery and marine and pipeline terminals. It could be so organized that hardly a single tank car would be required by most refiners for any but long hauls. It is on the long hauls, where tank cars can keep rolling the most miles to the fewest hours of loading and unloading time that the real efficiency of tank cars can be obtained.

Flexible Price Structure Needed to Develop Truck Relief

BUT to further develop the tank car and the truck to take up the tanker losses, it will be necessary to have prices of petroleum products at a high enough level to compensate for the higher cost of this transportation. As the greater use of tank car and trucks will come unexpectedly and in various spots—as men find ways of using them for the longer hauls—it will be impossible for government to set a certain day in advance when the price at certain points would be raised to care for this extra cost transportation; that is, if OPA is willing to have the public pay for it as does not seem to be the case todate.

The oil industry should be free of all tank wagon and retail price restrictions, at least, and it should be freed of such restrictions now. Then the individual oil man, as the demand from a new quarter arises, will find ways of adjusting his available transportation facilities to that demand, because he will be able at once to get his additional cost out of the change and will not have to finance a deficit in the operation, for an indefinite period and perhaps forever.

OPA took six months to allow a skimpy 0.3c advance on the East Coast to pay back to the oil companies the extra cost for all the products they moved by rail during last summer's

"shortage". Already the increased tank car hauls to the East are costing the companies millions and so far they are paying it out of their own pockets as the 0.3c advance of last fall is supposed to be by way of their collecting for the past deficit.

This is hard on the major companies and unfair, but at least they will be able to finance such a loss for a while. But how about the smaller Independents, both refiner and jobber? OPA's price policy so far is the very best that could be devised to put that Independent refiner and his Independent jobber still further out of business. All of OPA's economists could not think up a better way to restrict and destroy competition in the oil industry.

OPA's price policy, if continued, is going to be just about the best way to keep the oil industry from marshalling its tank car and truck fleets to take care of the consumer's needs as the tanker situation gets worse. The public and war munitions plants will be the chief sufferers from this lack of flexibility in OPA's price policy, yes and in its point of view.

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NPN's Washington Directory Of Oil Agency Headquarters

Following is a partial list and directory of governmental agencies in Washington dealing with matters affecting the oil industry: (List is as accurate as possible but is only tentative as room and phone numbers are constantly changing).
Abbreviations code: Rm for room; Ex for phone extension.

Office of Petroleum Coordinator

Interior Department (New Building) 18th and C. Sts., N. W., Phone No. Republic 1820.

Co-ordinator
Harold L. Ickes, Rm 6156, Ex 500.

Deputy Co-ordinator
Ralph K. Davies, Rm 6654, Ex 3831-2.

Assistant Deputy Co-ordinator
Robert E. Allen, Rm 6647, Ex 3334.

Co-ordinator's Staff
6th and 7th Floors, New Interior Bldg.

Special Assistants
George W. Holland, Rm 7010, Ex 4897.
Gordon M. Sessions, Rm 7515, Ex 2621, 4446.
J. Elmer Thomas, Rm 6420, Ex 4735.
Howard T. Mather, Rm 6624, Ex 4626.

Production Division
Donald R. Knowlton, Rm 6647, Ex 4861.
Paul M. Raigorodsky, assistant director, Rm 7425 Ex 4774.
Ralph J. Schilthuis, assistant director, Rm 6642, Ex 2907.

Refining Division
Wright W. Gary, director, Rm 6639, Ex 4646.
Robert B. Cragin, assistant director, Rm 7416, Ex 3237.
Phillip M. Robinson, assistant director, Rm 7510, Ex 4786-87.

Transportation Division
H. A. Gilbert, director, Rm 6629, Ex 3329-4418.

Marketing Division
John W. Frey, director, Rm 6623, Ex 4646-7.
Paul A. Best, assistant director, Rm 6625, Ex 3518.

Materials Division
William F. Huff, director, Rm 7314, Ex 4585.
Sturgis Stentz, assistant director, Rm 7314, Ex 4622, 4623.

Research Division
Edward B. Swanson, director, Rm. 7311, Ex 649.
Oliver S. Ambrose, assistant director, Rm 7317, Ex 4777.

Conservation Division
Everett Lee De Golyer, director, Rm 7514-16, Ex 4459.

Legal Division
J. Howard Marshall, chief counsel, Rm. 6649, Ex 4100.
David M. Hudson, associate chief counsel, Rm 6422, Ex 793.

OPM Priority Consultant
James E. Hughes, Rm 7340, Ex 4616-17.

Executive Officer
Stanley W. Crosthwait, Rm 6415, Ex 4363.

Liaison
Gen. Walter B. Pyron
Liaison agent between Army Department and OPC, Phone RE 6700, Ex 6044, Rm 6261 New War Department Bldg.
Guy Holcomb
Head, Small Business Section, Department of Justice, Phone RE 8200, Ex 687, Rm 3503.

Information Division
Herbert A. Yocom, director, Rm 7515, Ex 3844, 4650.

Foreign Division
James T. Duce, Rm 7421, Ex 4417, 4863.
Wm. D. Crampton, associate director, Rm 7446, Ex 4891.
C. S. Snodgrass, associate director, Rm 7446, Ex 4891.
F. Willard Bergen, executive secretary, Tanker Control Board, Rm 7412, Ex 4744.

Receptionist
Mrs. Rosalie E. Reid, Rm 6635, Ex 3429.

War Production Board

Petroleum Machinery and Equipment Section, Industrial and Office Machinery Branch, Division Industry Operations—Temporary Bldg. E, third Floor, Seventh Wing, Phone Republic 7500, Ex 3441.
Dr. J. T. Sanders, chief of the section, Ex 5741.
John W. Choates, refinery equipment, Ex 5751.
William L. Clark, production machinery, Ex 5751.
David Logan, production and refining equipment, Ex 5751.
M. A. Willner, production and transportation, Ex 5748.

Oil Section—New Social Security Bldg., Rm 4613, Phone Republic 7500.
Dr. Walter Whitman, petroleum consultant, Rm 2428, Ex 3037.
C. C. Monrad, assistant, Rm 2428, Ex 3535.

Office of Price Administration

Temporary D Bldg., 4th and Independence Ave. Phone Republic 5050.
Leon Henderson, administrator, Rm 46, Ex 5586
Dr. J. K. Galbraith, assistant administrator in charge of price division, Rm 258, Ex 5203.
George Doffing, price executive of fuel section, Rm 2530, Ex 5388.
Joseph H. Salmon, petroleum division unit chief, Rm 2703, Ex 6376.
Robert Collacott, head of refined products division, Rm 2530, Ex 6636.
Dr. Walter Voskuil, chief of research, Rm 2721, Ex 6370.
Harry R. Booth, legal adviser, Rm 1604, Ex 6359.
Watson B. Joyes, consultant in crude oil division, Rm 2719, Ex 4403.

Office of Defense Transportation

Interstate Commerce Commission Bldg., Constitution Ave. & 12th St., N. W. Phone REpublic 7500.
Joseph B. Eastman, director, Rm 5136, Ex 3527.
Fayette B. Dow, assistant on pipelines, tank cars, tankers and trucks, Rm 5132, Ex 3536.
J. G. Scott, (Post Office Bldg., Pennsylvania Ave. at 12th St.) counsel, Rm 7132, Ex 2460.
John L. Rogers, director of division of motor transport, Rm 4211, Ex 2297.
Sam F. Niness, advisor to Rogers, Rm 3330.

Congress

Congressional Oil Investigating Committee
Rep. Wm. J. Cole, Jr., chairman, New House Office Bldg., Rm 1535, Ex 699.

Senate Oil Shortage Investigating Committee
Sen. Francis Maloney, chairman, Senate Office Bldg., Rm 354, Ex 1196, phone National 3120.

Petroleum Industry War Council

William R. Boyd, Jr., Chairman, Suite 700B Shoreham Hotel. Phone No. ADams 0700. Allan H. Hand, secretary-treasurer.

U. S. Maritime Commission

Commerce Department Phone No. Republic 6620.
B. B. Jennings, director of tanker operations, War Shipping Administration, Rm 4309, Ex 87, 88, 89.

WAR-OIL ORDERS . . . FROM WASHINGTON

Government to Buy Up Tires Under New 'Tire Return' Plan

The "Tire Return Plan", which Office of Price Administration announced Feb. 27, embodies the following provisions:

1—At cost prices, plus 10% for out-of-pocket expenses incurred in carrying this "frozen" merchandise, dealers and jobbers can sell to original manufacturers or mass distributors as large a proportion as they wish of their passenger tire and tube stocks.

2—Manufacturers and mass distributors are required to buy all such tires and tubes offered them by dealers and jobbers at the latter's cost, plus 10%. OPA says special provisions are made for re-purchasing, at somewhat lower prices, "discontinued" lines of tires manufactured after Dec. 31, 1937.

3—All repurchased new passenger car tires and tubes must be sold by the manufacturers and mass distributors to the Defense Supplies Corp., a RFC subsidiary, at the cost to the manufacturers and mass distributors of such repurchased stocks, including the freight from dealer's place of business to the manufacturer's or mass distributor's warehouse to which tires and tubes were shipped.

4—The Plan also requires that manufacturers and mass distributors sell to DSC their own inventories of passenger car tires and tubes, excepting small working stocks which they will be permitted to retain to fulfill orders received in the near future under the rationing plan, at the cost of such merchandise to them.

Manufacturers and mass distributors will have the option of repurchasing tires from DSC when they wish. Moreover, they will be required to make such purchases from DSC to fill lawful demands for tires from holders of rationing certificates.

OPA says this plan "will require a small upward revision of the ceiling prices now in effect on wholesale and retail sales of new passenger car tires and tubes."

While new truck tires and tubes are not included in OPA's plan to relieve dealers and jobbers of "frozen" merchandise, OPA says dealers not wishing to sell truck tires and tubes back to manufacturers and mass distributors, may sell them back under terms of the rationing order, but if this is done, they are not entitled to the additional 10% which they'll get for new passenger car tires and tubes.

Reason for not including new truck tires and tubes, OPA explains, is that they are moving out rapidly enough under the rationing program to relieve dealers of any great burden in carrying stocks.

Principal objectives which OPA hopes this plan will achieve are:

1—To give tire dealers and jobbers financial relief from burden of carrying stocks by disposing of either all or a part of their inventory.

2—To concentrate initial control of nearly all new passenger car tires and tubes in government hands. (Some tires and tubes may be retained by dealers and jobbers). It's hoped this will minimize tire and tube bootlegging.

3—To give financial aid to small manufacturers unable to carry either their own inventories or the additional tires and tubes they must repurchase.

Aid to Small Dealer—OPA

OPA sees this plan as helping small dealers remain in business, as dealers and jobbers will be able to sell back as much of their stocks as they wish. Furthermore, OPA adds, as dealers and jobbers sell tires under the rationing plan, they should be able to replenish their limited stocks, since under the tire rationing regulation, manufacturers are required to limit their sales to company-owned outlets to the same proportion of total sales such outlets enjoyed before tire stocks were "frozen".

Commenting on this plan, Price Administrator Henderson said:

"This plan was developed to help tire dealers whose business has been curtailed because of the shortage of rubber and the necessity of rationing tires. The rubber situation is so acute that sales of passenger car tires must be limited to a relatively few essential users. This means that sales of tires now held by dealers and jobbers must be spread over a long period.

"Many dealers and jobbers cannot afford to tie up their working capital for such a long time and in some cases wish to get out of the tire business. This plan will permit those dealers and jobbers who wish to dispose of all or part of their passenger car tires and tubes to sell them back to manufacturers or mass distributors at reasonable prices."

This "Tire Return Plan" was worked out jointly, OPA says, by representative tire dealers, OPA's Industrial Council, DSC, and more than 50 tire and tube manufacturers, distributors and mail order houses. Bureau of Internal Revenue and Justice Department's anti-trust division also participated.

OPC Amends M-68 To Aid Land Owner

To protect individual property owners who wish to participate in the development and production of oil and gas fields under well-spacing provisions of Conservation Order M-68 (*NPN Dec. 24, p. 3*), Office of Petroleum Co-ordinator says such owners should file applications with OPC for exceptions.

Issues Recommendation

OPC's statements were in form of a recommendation (No. 32) which was approved by Assistant Attorney General Arnold. Provisions were summed up thus:

"Whenever a portion of the owners in a field refuse or fail to afford the remainder of such owners a reasonable opportunity to participate in the development thereof or the production derived therefrom, irrespective of whether such participation would be accomplished by consolidations occurring prior or subsequent to the formation of drilling units within adjoining tracts, those who have been so deprived should file, with the Petroleum Coordinator for National Defense, applications for consideration by the Division of Industry Operations of the War Production Board, requesting exceptions to those orders which prohibit the use of material except in specified instances, setting forth, in addition to the information required by the appropriate form, not only their willingness to enter into reasonable consolidation agreements but the circumstances surrounding the refusal of the adjoining owners to undertake such consolidations."

Recommendation was signed by Deputy Petroleum Co-ordinator Davies.

WPB Extends P-98 For Oil Priorities

Oil industry's preference rating order—P-98—has been extended from Feb. 28 to March 15 by order of War Production Board's director of industry operations, J. S. Knowlson.

Text of the extending order follows:

TITLE 32—NATIONAL DEFENSE
CHAPTER IX—WAR PRODUCTION BOARD

SUBCHAPTER B—DIVISION OF INDUSTRY OPERATIONS
PART 1041

Production, Transportation, Refining and Marketing of Petroleum.

Extension of Preference Rating Order P-98.

It is hereby ordered, that Section 1041.1 (Preference Rating Order P-98), issued January 14, 1942, as amended by Amendment No. 1 to Preference Rating Order No. P-98, issued February 20, 1942, shall continue in effect until March 15, 1942, unless sooner revoked by the Director of Industry Operations.

Issued this 28th day of February, 1942.

(Signed) J. S. Knowlson,
Director of Industry Operations.

Commenting on this, Deputy Co-ordinator Ralph K. Davies said:

"We are faced with the necessity of helping the industry function at a maximum capacity with a minimum of materials.

"When the P-98 order was originally drafted, it was impossible to foresee all the needs for materials and difficulties in obtaining them that would arise in the oil industry.

"Since the order has been in operation, we have had an opportunity to find the points that needed correction. By March 15, we hope that these corrections will become effective."

Tightens Chlorine Order

Tightening down on use of chlorine, War Production Board Feb. 25 issued an amendment to Conservation Order M-19 which assigned a preference rating of A-10 to "petroleum production and refining" for purchase of this chemical.

7-to-7 May Force War Plants To Sell Gasoline to Workers

(*Continued from page* 3)

sorts of agitators are telling the people to put up their cars 'for the duration'. The 'tire jitters' are depriving some motorists of their cars—even for most necessary driving. And now the industry leaders are urging that we close stations at night, join the move to cut gasoline consumption. They'll have everybody riding bicycles soon."

7-to-7 Opposition Appears

The 7-to-7 bandwagon has been rolling along, with most everyone taking it for granted that there was no opposition. One after another dealer associations have voted for night-closing. Some state jobber associations have backed the plan. But lately some opposition has developed. And as it has cropped up, others have dared to raise their voices in protest.

At the Kansas jobbers' meeting in Wichita last week, a resolution favoring night-closing was reported out of committee. There was little debate. But, surprisingly, when the resolution came up about one-third of the 60 jobbers present voted against it. Mostly, they were jobbers with highway stations which have built up a large night business from trucks and travelers. Some 24-hour city station operators were also included among the opponents.

Mr. Williams' remarks to NPN indicate that he and other trackage operators will make a fight against any 7-to-7 resolution that is proposed at the Indiana jobbers' meeting this week.

'If Necessary, Issue Order'

Some marketers take this attitude:

If 7-to-7 closing of stations is necessary to help carry on the war, then let the War Production Board issue an order to that effect and close *all* stations. But, if the WPB won't issue such an order, then that is proof that the night-closing idea is not a wartime necessity but simply an "economic reform" move. And if Petroleum Co-ordinator issues only a "recommendation" to the industry asking that stations close from 7 p.m. to 7 a.m., then such a "request" will be ignored by the chisellers—as it was in the Atlantic Coast area last summer.

Marketer Asks Injunction

In Cleveland, 7-to-7 plans apparently have not yet recovered from the set-back that followed an independent marketers' suit for an injunction against the Cleveland dealers association. Ray C. France, of U-Save Stations, Inc., went into court seeking an injunction suit against officers of the dealer association. He charged that the defendants had "conspired together to force and coerce" him into closing his stations after 7 p.m. He blamed the defendants for instigating an automobile blockade at one of his stations, charging also that threats had been made to damage his equipment if he didn't comply with their demands.

When suit came up for hearing on a temporary restraining order, an agreement was reached to continue the case. Court said that if there was any repetition of the acts complained of, it would set the case down for hearing on 24-hour notice. Since then, remarks Hubert Fuller, Cleveland, attorney for the plaintiff, "there has been no attempt to interfere with our operations."

Large Business at Night

A survey of 300 stations in Ohio, recently completed, indicates that more than a third of the services rendered the public are handled after 7 p.m. Rate of service per hour between 7 p.m. and 11 p.m. is greater than the rate from 7 a.m. to 7 p.m.

District 2 Group Approves Proposal For 7 to 7 Curfew

NPN News Bureau

CHICAGO, Feb. 28.—District 2 Marketing Committee is in favor of closing service stations in the 15-state district from 7 p. m. to 7 a. m.

At its Feb. 19 meeting, the Committee approved a recommendation of its petroleum retailers subcommittee and sent it to Washington. The meeting was marked by a discussion of gasoline rationing, although the committee does not believe it is necessary at present. Nevertheless, the group believes that adequate advance steps should be taken in case the necessity arises and is working on plans to that end.

Other reports were received from the temporary marketing equipment subcommittee and the temporary subcommittee on containers. Both of these reports were approved, but their contents were not disclosed. However, officials said the marketing equipment recommendations, if adopted by Washington, would improve the workings of Conservation Order M-68-c, the restrictive order on oil marketing.

Joseph L. Nolan, manager of Farmers Union Central Exchange, St. Paul, Minn., was appointed to the lubricating oil compounders subcommittee.

Canadians Can't Buy Tires Unless Serial Is O. K.

Special to NPN

OTTAWA, Feb. 28.—To assist police in preventing tire thefts, it has been made an offense to sell or buy tires in Canada from which the serial number has been removed or obliterated, unless the Controller of Supplies or a senior police officer issues a permit. Penalty is a fine up to $5000 or five years imprisonment or both.

Save Anti-Freeze Mixtures OPA Warns Motorists

Save your anti-freeze mixtures next spring when draining your car, advises Dan R. West, director of the Consumer Division of Office of Price Administration, as chemicals making up the anti-freeze compounds are needed for explosives.

The shortage of tin cans prompted Mr. West to urge car owners to bring their own containers to service stations when having the anti-freeze drained.

January Tire Shipments Drop

NPN News Bureau

NEW YORK, Feb. 28.—January shipments of automotive pneumatic casings decreased 52.7% below December, 1941, according to Rubber Manufacturers Assn. Inc. Total shipments for January were 1,231,422 units—74.6% below January, 1941.

Production of 1,461,217 units was 50.8% below December and 73.4% below January, 1941.

Oil Accountants Hear Answers To Queries on M-68 and P-98

NPN News Bureau

TULSA, Mar. 2.—E. E. Robbins, materials director for District 2, Office of Petroleum Co-ordinator, appearing before Petroleum Accountants Society of Oklahoma at the Mayo Hotel here, Feb. 25, held a question and answer forum during the meeting.

Speaking to the group before answering questions, Robbins gave a brief resume of OPC's functions and the purposes of Preference Rating Order P-98 and Conservation Order M-68, but said he could not answer specific questions about M-68 since his concern was with materials.

He pointed out, however, the "one to forty acres" spacing "is not a permanent arrangement—there likely will be some amendment shortly in order to furnish all the necessary crude for the war effort."

'Drilling Won't Halt'

He does not think there will be much cessation of active drilling "because we are definitely in need of new reserves and supplies of crude." "We do not have enough reserves now; therefore wildcat drilling will be prosecuted."

Discusses P-98

He said the "early kicks on P-98 made it seem that a new order would have to be drafted; now that the countersignature provision has been eliminated for purchase orders of under $500 by Amendment 1, the order seems pretty good after all."

Answering questions, he said: "There is no restriction on sale of equipment, new or second hand, unless seller has knowledge equipment is to be used to violate M-68. It is the companies' patriotic duty to sell all equipment which can be spared.

"If equipment for a well is secured under a priority order and the well is then delayed, restrictions of M-68 apply and material may not be used for a purpose which will violate provisions of this order.

"The 60-day stock limitation applies to all company inventory, where ever situated; it cannot be divided into districts.

Must Comply with M-68

Second-hand material can be used if M-68 provisions are complied with—otherwise, no.

"M-68 says you can do certain things—go ahead and do those things. If there are exceptional circumstances, then exceptions should be applied for.

"No definite forms for reports showing compliance with P-98 and M-68 have been decided upon yet; there are several under consideration.

"Just because the use of some product or material is not standard or comfortable is no reason why it shouldn't be used. All inventories must be used up to conserve vital materials."

WITH THE ASSOCIATIONS

Oil's War Problems To be Major Topic At Wisconsin Meet

Special to NPN

MILWAUKEE, Feb. 28.—Wisconsin Petroleum Assn. expects a "record breaking attendance" at its annual convention here March 18, 19 and 20 where war problems are expected to be the major topics of discussion.

In connection with the Wisconsin association meeting, the State Executives Council of America, an organization composed of the secretaries of independent jobber associations, will hold a meeting.

Convention of the Wisconsin association, to be held in the Shroeder Hotel, is to be addressed by Dr. John W. Frey, Director of Marketing for Office of Petroleum Co-ordinator; G. Denny Moore, New York, managing director of the Gasoline Pump Manufacturers Assn.; Prof. Grover C. Wilson, diesel engine expert of University of Wisconsin and chairman of the Milwaukee section of Society of Automotive Engineers; and NPN Editor Warren C. Platt.

Office of Price Administration and other federal agencies will be on the program to answer questions and discuss recent ruling and regulations, according to Roy L. Brecke, executive secretary.

Reinhardt Named Head Of Kansas Oil Men

New president of the Kansas Oil Men's Assn., elected Feb. 24 at the convention at Wichita, is Ted Reinhardt, head of the Dixie Oil Co., Salina. He takes the place of R. O. Brown, Admire.

New vice - president is Clovis Rankin, Home Oil Co., Zenith, who replaces H. L. Funk, White City.

New directors are W. H. Pounds, W. H. Pounds & Son, Smiths Center; Thomas Sejkora, Home Oil Co., Jennings; Jack Jaquiss, Independent Oil Co., Coldwater; G. P. Gephart, Gephart Filling Station, Peabody; Charles Boren, Boren Oil Co., Manhattan; R. P. Johnston, Crescent Oil Co., Independence; M. K. Williams, Wellington; James Jasper, Farmers Oil Co., Dighton.

C. E. Holmes was re-elected executive secretary. Mrs. Elsie Martin, of the association's staff, was made secretary and treasurer. R. V. Hyatt is field secretary and editor of the association's bulletin, which recently published its 28th anniversary edition.

Priority Rules Explained At Kansas Oil Men's Meet

By N.P.N. Staff Writer

WICHITA, Feb. 28.—How the recent change in P-98, the priority order for the petroleum industry, will aid oil marketers in securing materials and equipment needed for the maintenance of their bulk plants, stations and trucks, was discussed at the annual convention here, Feb. 24, of the Kansas Oil Men's Assn. S. E. Shoup, field representative from the Kansas City office of the WPB priority division, explained the text of the amendment, which he said he had received only that morning.

In effect, he said, it allows marketers to spend up to $500 for necessary maintenance and replacement equipment taking an A-8 or A-10 rating, without the approval of the district Petroleum Co-ordinator's office or any other government agency.

Since a P-98 order can be signed by any authorized agent for the oil company making the purchase, Mr. Shoup gave his opinion that the oil company could buy immediately, as needed, materials or equipment up to $500, necessary for the maintenance of their business. He used as an example a truck driver on the road breaking an axle and needing a new one before he could continue his trip. Under the change, he said, the truck driver could secure authorization over the telephone from his company to make the purchase, and could buy it on the spot, signing a P-98 order as furnished by the company supplying the part if he did not have one in his own possession.

For equipment for maintenance above $500, and for equipment in any amount for the oil company to keep in stock for repairs or replacements, and for any intended for new construction, the oil company has to continue to make out P-98 orders in triplicate, with the proper endorsement and have them approved by the district Petroleum Co-ordinator's office.

Mr. Shoup answered questions from the floor on priority orders and ratings for oil marketers, pointing out first that he could discuss these questions but that he could not make official interpretations. He said that the maintenance of essential industries was a primary objective of the priority system and told the marketers that an A-10 rating for maintenance, on a P-98 form, was more likely to be approved than an A-1 rating

K. O. M. A. Elects Reinhardt as 1942 President

Pictured from left to right are: C. E. Holmes, re-elected K.O.M.A. executive secretary; R. O. Brown, retiring president, Admire, Brown Oil Co.; Ted Reinhardt, newly elected president, Salina, Dixie Oil Co.; and Clovis Rankin, newly elected vice-president, Zenith, Home Oil Co.

Gathered together during the Kansas Oil Men's annual meeting in Wichita are, left to right: E. N. Schriber, Wichita, Schriber Oil & Gas; A. M. Telfor, supervisor of Kansas state refinery agents; W. F. Watson, Marysville, West Gate Oil Co.; V. B. Guthrie and W. C. Platt, Cleveland, National Petroleum News; Fred Kistler, Coffeyville, Kistler Home Oil Co.; R. O. Brown, retiring president of K.O.M.A., Admire, Brown Oil Co.; Lane Dunagin, Topeka, Dunagin Oil Co.

for expansion. He advised the oil men to secure and keep on hand supplies of the P-98 order forms.

As an example, Mr. Shoup said that pump hose, applied for under an A-10 rating for maintenance on a P-98 form, had a better chance of approval than if applied for under a special higher rating for rubber goods.

Explains Repair Procedure

Asked if it were necessary to repair an underground tank in place, the speaker said he believed it could be replaced with another used tank, instead of the first tank being repaired and put back in the same location. The same principle applied to gasoline pumps, meters and other equipment, he said.

Questioned as to what the marketer should do about removing old equipment from a bulk plant or station not in use, it was stated the marketer should make application under a PD-1-a or PD-200 form for authority, particularly if the services of an electrician or plumber were required. Where the work of removing the equipment could be done by the marketer himself, or his crew, it was believed he could go ahead and take out the equipment at an abandoned location.

For putting auxiliary engines and pumps on delivery or transport trucks, Mr. Shoup said to make application on a P-98 form, showing the desirability of the equipment from the standpoint of economical and efficient operations and have it approved by the district Petroleum Co-ordinator's office.

Asked by marketers if they could remove tires from their own stocks to use on their own equipment, he said all matters pertaining to tires had been delegated to the Office of Price Administration and taken entirely outside the priority agencies' jurisdiction.

Mr. Shoup told the marketers they should be sure to make out P-98 orders for all maintenance and repair equipment and parts taken from their own stocks, to enable them to replace such stocks; but that it was inconsequential whether the order was made out before or after the replacement equipment or parts had been installed. He advised that, when a marketer installed maintenance equipment for a dealer or other account, which was to take possession of the equipment, to be sure to make arrangements to secure a P-98 order for it. Strictly speaking, he said, when a person has equipment in their possession, they do not have to give a priority order for it.

He referred to another important change in the priority system, effective March 1, provided for in the PD-1-a form which takes the place of PD-1. This provides for the extension of an approved purchase order, to cover secondary suppliers contributing materials or parts to the first supplier.

Oil Marketing Will Continue Good During War, Editor Tells Kansans

Oil marketing enterprises, in comparison with a great many other businesses, are in good shape to meet the problems arising through the great diversion of some oil products and many other materials to the nation's war effort, Warren C. Platt, editor-publisher of NATIONAL PETROLEUM NEWS, told the Kansas Oil Men's Assn., Feb. 23, at their annual convention in Wichita. They are hardy enterprises, he said, that have withstood many storms and steadily forged ahead during the 34 years of the Gasoline Age.

Granting that there is some loss in gasoline business with tire rationing, the speaker pointed out that it will be only the second general decline in 34 years of rapidly growing gasoline sales.

Don't confuse loss in station business, because of tire rationing, with a general loss in business, he advised the marketers. "Watch your bulk plant sales as the true index of an oil marketing enterprise today," he said. "This is picking up for many companies around manufacturing districts and on country routes."

The first thing for oil companies to do in meeting tire rationing, said Mr. Platt, is to find out how much mileage there actually is in tires properly driven and then to pass this on to their customers. There is no scientific data on this point, because the research and experimental work of the rubber companies has been to learn how quickly and under what conditions a tire would break down.

Reduce Tire 'Jitters'

"This gives great importance to the experience data oil marketers can get in their own communities," he stated. "Watch for the smooth tires of your customer drivers. Send a man out to talk to those drivers and find out what wear they have already gotten from their tires and how it was secured. Post it on a bulletin board at your stations. Tell your customers what they can do to add to their tire mileage with proper attention to their driving habits.

"Out of such data you can figure out a formula that will convince most people that they have a great deal more life in their tires than they are considering in their present driving."

Iowa Marketers Hang Up SRO Sign As Frey Discusses Marketing in War

By V. B. GUTHRIE, NPN Managing Editor

DES MOINES, Feb. 28.—Farm requirements for petroleum products will be considered essential, even though rationing of requirements for civilian needs becomes necessary, Dr. John W. Frey, director of marketing in the Office of Petroleum Co-ordinator at Washington, told Iowa Independent Oil Jobbers' Assn. at its convention here Feb. 25-27. "The farmer is in the first line of defense," he said.

So large a crowd of Iowa oil men gathered to hear Dr. Frey talk on "Petroleum Marketing and the War Effort", that this session had to be transferred to the hotel's main ballroom and even then many had to stand.

Gasoline rationing is a possibility in the Mid-West, he stated; but if it does come, he believes it will be due more to the reduction in availabilty of tires, rather than to any shortage in gasoline supplies.

Gasoline and heating oils must be taken from other sections to the East Coast, to make up the present shortage in supply there.

"To the extent these cannot be replaced in the middle west from the south may depend on whether rationing is necessary," he said.

In his introductory remarks, Dr. Frey said the objective of the Petroleum Co-ordinator's office was to meet the war demand with the least possible disruption of civilian supply. He said the Washington agencies in charge of petroleum wanted to work with the men in the industry, and he urged the Iowa jobbers, as well as marketers generally, to write their problems to him in Washington. Only in that way can Washington know the difficulties confronting the oil companies in all parts of the country. "Either write us at Washington or place the matters before your district committees," he told the marketers.

Distribution Problems Vary

The picture on oil distribution will not be the same over the country, said Dr. Frey, and he advised the Iowa marketers not to assume that the same measures they read about elsewhere were going to be applied in their territories. The East Coast and the Pacific Northwest are the present critical areas due to transportation difficulties, he said.

Most of Dr. Frey's time was given to answering questions from the floor, and a large number were popped at him. Some applying to equipment were answered by E. E. Robbins, director of materials in the Chicago Petroleum Co-ordinator's office, who attended in the absence of Elmer E. Batzell, attorney in the legal division of OPC at Washington.

Many questions were put to Dr. Frey on 7 to 7 closing of service stations. He said this was being considered in Washington, and that a recommendation had also been received from the East Coast regional authorities urging an order to close stations on Sunday. He said he believed that early closing of stations would come about by agreement among the oil companies. The labor situation is such, he said, particularly on the East Coast, that not only service stations but also bulk plants are finding it difficult to maintain their positions.

Cites Difficulties in Curfew

In the event of a general 7 to 7 closing, there will have to be some provision for keeping selected stations on principal highways open 24 hours. The difficulty will be in deciding fairly what stations are to be kept open, he said.

He said the Army provided for its own fuel needs in moving men and equipment, and does not insist that the 80-octane gasoline it uses be generally distributed among oil companies, to be available if needed. If the Army is going to need any of your facilities, it will indicate its needs in advance, according to Dr. Frey.

On equipment, Dr. Frey said he believed a marketer with a maintenance car or truck could remove a pump or similar equipment and take it to his bulk plant for repair, replacing it with old equipment which could remain at the location. Asked about tires for a marketer's maintenance truck, he said all matters pertaining to tires were decided in the Office of Price Administration.

Refers Price Queries to OPA

Asked about provisions for dealers and marketers to seek to increase their margins to enable them to hold their businesses together, Dr. Frey said this also was function of the OPA. He said his own office would recommend changes believed necessary, but that was as far as he could go. He said he believed the OPA was now more reasonable to requests for adjusting sub-normal differentials because definite procedure has now been set up under the price law for making such adjustments.

Dr. Frey was asked whether there would be authorization for one oil company to buy or otherwise merge the properties of another company going out of business. He did not answer directly but said that there was already pooling of supplies of petroleum products in the east, and he thought it likely that, if pooling of supplies or equipment or facilities was regarded as necessary, it would be worked out.

He urged marketers to take

Iowans Name Schultz As 1942 President

New president of the Iowa Independent Oil Jobbers' Assn. is John W. Schultz, Consumers Petroleum Co., Davenport, elected Feb. 25 at the association's annual convention in Des Moines. He replaces Leland L. Harms, Harms Oil Co., Allison who has held the presidency the last two years. Mr. Schultz has been an oil marketer in Davenport for 20 years.

Newly elected vice-president is Ernest D. Anliker, Anliker Oil Co., West Bend, who succeeds Gerhard Goplerud, Goplerud Oil Co., Osage.

F. H. Hatch, Jones County Oil Co., Edgewood, was re-elected treasurer and A. C. Gienapp, Manchester, was re-elected executive secretary. Mr. Gienapp was especially commended by the members for his success in building up the association.

New directors of the Iowa association are Harry Fee, Harry Fee Oil Co., Waterloo; Ernest Peter, Northern Iowa Oil Co., Cresco; C. T. Harris, Harris Oil Co., Spencer; Paul Peterson, Peterson Oil Co., Fort Dodge; Tom McDonough, Home Oil Co., Williamsburg, and President Schultz.

Iowans 'Talk It Over' at Des Moines

This discussion might concern wartime restriction on use of tin cans for oil. Left to right are Ernest D. Anliker, newly elected vice-president of Iowa Independent Oil Jobbers' Assn.; Leland L. Harms, retiring president; and John W. Schultz, elected president for 1942

up with Fayette B. Dow's office at Washington any cases coming to their notice where tank cars were left standing on their sidings after unloading and not promptly started on their back trip.

Dr. Frey said that a marketer buying on the spot market without a contract would have the same assurance of supplies in case of rationing of gasoline as a marketer buying on a contract. "His status will be the same as that of anyone else within the limits of the quantity available," he said.

Lubes Will Change—Frey

There will be changes in all lubricants because of the shortage of additives, the speaker said, but the supply of additives is sufficient to assure necessary quantities of the heavy duty crankcase oils for buses, diesels and tractors. Additives for extreme pressure gear lubricants will be limited to oils used in hypoid rear axles, he said, thus making it probably necessary for marketers to carry a straight mineral oil for transmissions.

"If a marketer with bulk plants on railroad sidings diverts business to transport trucks, will your office come to his aid if the railroad tries to cancel his lease?" Dr. Frey was asked. His answer was that his office would certainly call to the attention of the railroad's executives any such situation for an individual oil company. He also said he believed the railroads were likely to be reasonable in their attitude today toward such matters, for the reason that they realize the economies in making short hauls by truck and using tank cars for long hauls. The major railroads today are themselves operating trucks, he pointed out.

At the end of the question period, Dr. Frey asked the marketers to make every effort to conserve their equipment, by inspecting it and by making minor repairs and adjustments which would save later replacement of parts. "Make things do, keep up what you have and then you will get help where new materials and equipment are necessary to keep your business going," he said.

* * *

10-Point Wartime Program Outlined by Leland Harms

A 10-point program for oil marketing companies, to bring about their full co-operation with the petroleum industry and the nation in its war effort, was presented to the Iowa Independent Oil Jobbers' Assn., at its annual convention, in the address of retiring president of Leland L. Harms, Harms Oil Co., Allison. Mr. Harms is also a member of District 2 marketing committee.

His 10 points were:

1—Back up the mobilization program of the country. If your men are needed, let them go unless they are absolutely essential to the conduct of your business. If some of your supplies for civilian purposes are needed in the military effort, accept that fact and reshape your operations as necessary.

2—Keep your storage filled and keep your supplies at the point of consumption as far as possible. This will make less of an interruption in your deliveries if you later have to wait for shipments from your supplier.

3—Pay cash for your merchandise and ask for cash from your accounts when deliveries are made. This will benefit your dealers in bringing them to put their affairs into shape against a later general tightening of credit.

4—Take care of your present equipment. Take advantage of the recent change in the priority regulations for the petroleum industry, which allows marketers to spend up to $500 on an order for repairs and replacements for maintenance, without authorization of a government agency.

5—Co-operate as closely as possible with your suppliers. If it is necessary later for suppliers to sell on preference ratings, such co-operation will aid you in securing the preference rating to which you are entitled.

6—Support the National Oil Marketers' Association. It will then be better able to present the needs of independent marketers at Washington.

7—Co-operate with the government agencies regulating the petroleum industry. Fill out the questionnaires you will be getting from time to time promptly and intelligently. When voluntary programs are suggested, comply with them and by this means possibly save regulation of your business.

8—Keep accurate records of all departments of your business. Then you will know your actual costs and this data, supplied to the industry's committees as necessary, will aid in protecting your business from higher taxes.

9—Put aside now any program for the expansion of your business. Put that extra management effort into taking care of your present accounts to the best advantage to them and to your own business.

10—Support your own state association. Your secretary will not be able to get around the state and call on members as much as in the past, and he will be busy interpreting orders and keeping up with the coming changes. Closer co-operation on your part will enable the association to continue to function to your best interests.

* * *

Adopt Resolutions On Trucks, Prices And Wartime Rules

That the Office of Price Administration establish a permanent differential of not less than 2.5c a gal. on gasoline, between the delivered tank car and the dealer tank wagon price was recommended in a resolution adopted by the Iowa Independent Oil Jobbers' Assn.

Another resolution urged: In the event of rationing of supplies of petroleum products for civilian needs in the war emergency, that an independent marketer be named as the official supplier for civilian requirements. This resolution, addressed to Petroleum Co-ordinator Ickes, stated that independent marketers depend entirely on civilian business, while the large oil companies have exclusively the business of supplying the wartime requirements of the U. S. and allied governments.

The 9 resolutions adopted by the Iowa jobbers' association are summarized as follows:

1—Opposing any regulations limiting the capacity of delivery tank trucks or transports. It was stated that records show there is no direct relationship between size of load and the accident hazard and that limitations on oil truck tank capacity would require an additional number of units to be on the highways.

2—Urging amendment of state laws regulating freight carrier trucks, to provide uniformity throughout the country in laws on this subject.

3—Recommended to Petroleum Co-ordinator Ickes, if curtailment of petroleum products for civilian use becomes necessary, that an independent oil distributor, jobber or marketer, be designated as the official supplier.

4—Continuing the association's activities in freight rate matters, particularly in the complaint now on file with the Interstate Commerce Commission attacking heavy oil rates in their relationship with refined oil rates.

5—Recommending to the petroleum industry and the Office of Price Administration that there be established and maintained a differential of not less than 2.5c per gallon on gasoline between the delivered tank car and the dealer tank wagon price.

6—Urging members to work to secure the proposed amendment to the Iowa state constitution preventing the diversion of automotive revenue to any other purpose than the construction and maintenance of Iowa public highways.

7 — Authorizing Secretary Gienapp to become a member of the States Executives Council, members of which are the executive heads of the state oil trade associations.

8 — Recommending nationwide closing of service stations from 7 p.m. to 7 a.m. to conserve electricity and manpower.

9—Pledging the services and resources of members of the Iowa Independent Oil Jobbers Assn. in the nation's war effort.

Salesmanship Not "Out" For the Duration

Salesmanship and merchandising should not be dropped by oil companies in their war program, even though their business can't be expanded, E. J. Gallmeyer, vice-president and director of sales, Wayne Pump Co., told Iowa marketers in an inspirational address at their convention.

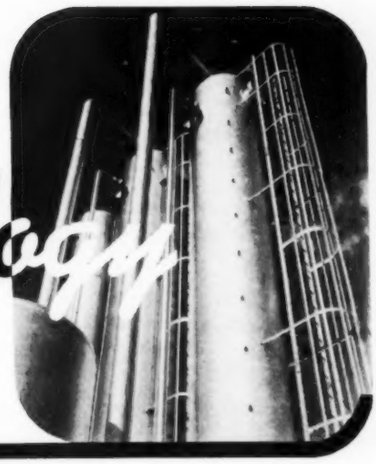
"Use salesmanship to make friends and tie closer to your present customers, to rebuild some of the fences you were too busy to repair when you were going after new accounts," he said. "Use management to keep your physical equipment, your company morale and your contacts with your trade in the best possible condition.

"In this way you will be ready to move ahead whenever the opportunity comes —and come it certainly will."

"Men of Spirit Make the Times Serve Them," was the title of his address.

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY



Transportation Seen as Major Problem

By Eastern Refinery Technologists

By GEORGE B. MURPHY, NPN Technical Editor

● Here is a sizeup of refining developments under the impetus of wartime requirements, as given the writer by executives and technologists with the large oil companies and refinery engineering firms in New York. An outstanding point made by these men is that the industry must solve its transportation difficulties, or face the alternative of putting additional steel into facilities for the storage of its products.

A development head of a large company stated that his firm's main interests for this year were in alkylation, isomerization of butane and higher hydrocarbons, and new processes for lubricating oil and wax.

He said that the Sun Oil Co. was installing a large plant for lubricating oil treatment by the Duo Sol process, and that solvent dewaxing plants were going in in a number of refineries. His company utilizes the sulphuric acid alkylation process. He said the 100-octane aviation gasoline industry was shifting from alkylation to the manufacture of high-quality base stocks.

The Co-operative Research Assn. is developing many new catalytic processes that will be used in the future by refiners. The Texas Co. has joined with Standard Oil Co. of Indiana for development of the isomate process, i.e., naphtha isomerization. This executive believed that small companies probably should forget their house-brand gasoline specifications and devote their efforts to war products, although it will be economically difficult for many small refiners to install catalytic processes. He illustrated by sketching a curve showing the relation between the cost per barrel installation versus the capacity of the unit.

He mentioned two plants that were being installed for alkylation by the hydrofluoric acid method. In his opinion, wax today is more important than the lubricant from many heavy petroleum distillate stocks, and acetone-benzol dewaxing, in his opinion, is the most suitable.

Another executive of a large refining company stated that oil companies are being sorely pressed to meet the requirements to produce more than 150,000 bbls. per day of 100-octane and large quantities of toluene, and that small refiners could contribute their share. Companies not supplying the government with products are needed to meet requirements of the public and South American countries. In his opinion, this will be the biggest year in history for catalytic processes, but he fears that projects may be handicapped by the conscription of many designers and draftsmen required for plant layouts. His company is now making toluol from hydroformed distillate.

In his opinion, refiners should increase the number of working hours per week for technical men from 40 to 48. He believes the best source of butadiene for synthetic rubber is by catalytic cracking of gas oil since the butane and butylene now available is being practically all used for 100-octane aviation fuel. In his opinion, the residue propane, can be used for regular-grade gasoline. He emphasized the tremendous new construction now going on in this country's refineries.

One of the problems that is worrying refiners in the east is transportation. The east coast shortage of oil is a reality. For this reason, he believes, the government is going to give preference to steel products used for tank cars and tankers. He stated that the relative importance of petroleum fuels was first, aviation gasoline; second, Bunker C; third, distillate fuel; and fourth and last, regular-grade gasoline. These must all be hauled long distances. He said that if oil companies don't solve their own problems, someone else will solve them for them. There might even possibly be a dictator of oil in Washington. He mentioned benzol as one of the needed products from petroleum, not only for fuel, but for organic chemicals required for rubber, etc.

A representative of a large refinery contractor stated in his opinion catalytic cracking is our most important process today for the manufacture of toluol, butadiene, and aviation gasoline. He also believes that additional fractionation equipment is required for gasolines and gas.

Butadiene is removed from gases by solvent extraction as is done by the Standard Oil Co. of New Jersey for this purpose. He emphasized the large availability of isobutane from the gases of a Houdry unit.

A representative of a large refiner said that his company is installing alkylation plants in addition to the one already operating using sulphuric acid catalysts. They

have no isomerization process, but are developing one. They intend to erect a catalytic cracking unit in the near future. His company is using their olefinic gases for alkylation, whereas formerly they had produced polymer gasoline. He stated that the dehydrogenation of butylene to butadiene was a good process.

An executive of one of the largest refinery construction companies gave his opinion that at the present time there is a lack of liaison between the Office of Petroleum Co-ordinator and the refiners in the field. He believes that the smallest refiners that could get into the war picture are those with a capacity of 10,000 to 25,000 bbls. of crude per day. He saw no need for naphtha isomerization process. Butane isomerization plants are very expensive, but small refiners could install such plants and sell the products to larger refiners who have alkylation units, this executive thinks.

Large Catalytic Cracking Units Planned

Plants with a capacity of 200,000 bbls. charging capacity for catalytic cracking are going in this year at a cost of roughly $100,000,000, which would include butadiene and toluene manufacture. The best butadiene process in his opinion is charging butylene-2. He said that the charge to a catalytic cracker of the fluid catalyst type was always in the form of vapor and that the finely divided catalysts went around and around in these vapors. The only commercial unit being built for naphtha isomerization is by the Standard Oil Co. of Indiana. The charging stock is 160° F.E.P.

In connection with sulphuric acid alkylation, the new development is the reclamation of the sulphuric acid by washing and reconcentrating. Some plants, however, use their spent catalysts for treating gasoline or lubricants.

Shell has erected butadiene plants for the dehydrogenation of butylene. Very few of these plants have been erected, and in the representatives opinion the country is way behind in their requirements for butadiene to make Buna S rubber. He said that the demand for JUIK plants was high, using propane and phenol for deasphaltizing or dewaxing. The electrical method is the latest development for dewaxing. Wax distillate is charged to an electro-statically charged drum, where a clean separation is obtained. This is the big process of the future for wax and lubricating oils. Its installation cost is very low. For propane dewaxing an Oliver filter is used. The hydroforming process for toluene manufacture is advised.

Toluene is made by four different methods; namely, azeotropic distillation, SO_2 extraction, phenol extraction or methanol distillation.

This refinery executive advised companies of about 25,000 bbls. per day crude capacity to install standard 7500-bbl. catalytic cracking units to assist in the war effort. Small refiners cannot order a tailor-made plant today, since engineering design is very expensive and designers are busy. For hydroforming, the smallest plant is 4000 bbls. per day, while alkylation units may be as small as 150 bbls. per day. Naphtha isomerization units can be built as low as 400-500 bbls. per day capacity, while butane isomerization or butadiene units may be very small (50 bbls. per day).

A leading technologist said that the major interest of refiners today is for aviation gasoline, synthetic rubber and toluene plants. In his opinion, catalytic cracking cannot be used for toluene manufacture, but the fluid catalyst method is extremely important today for other products such as butadiene. Butyl rubber is only in an experimental stage. Catalysts for desulphurizing are important. Hydroforming aromatizes naphtha to aromatics, especially toluol. Fluid catalysts mean "dust storms." He believes hydroforming for aromatics with recycling of the gases in the presence of a catalyst will be used in the future.

Other technologists of a large company stated that Houdry gasoline was essential for motor fuel today because of the shortage of certain high-octane components going into aviation gasolines. Magnolia's alkylation unit is the largest in the U. S. but additional pyrolytic cracking is required to provide the olefins for this plant. The company does not sell butadiene but is studying the process for its manufacture. It would crack butane to butylene as a starter. The company makes toluene but not on a large commercial scale. It believes, however, that the U. S. will in the future use aromatics in aviation fuel when they will be in a good position to supply the product. Safety aviation fuel is, they believe, a dead issue for the duration of the war. Lubricants by solvent refining are in big demand but additives are on the priorities list.

In the opinion (a new one) of these technologists the quality of regular-grade gasoline may improve in anti-knock and volatility due to the necessity for more cracking and reforming to produce necessary gases. After the war, a large percentage of gasoline will be manufactured, starting with gases.

One refinery executive said that his company's Houdry unit was in operation and giving satisfactory results. It is not manufacturing aviation gasoline from this plant. He did not believe that naphtha isomerization is broad enough to cover the requirement for high-octane gasoline of the future. He thought the installation cost was high and the operating results did not up-grade the products sufficiently to justify installation. In addition, C_3 fractions are too rare today to be considered as charging stock. They have developed new additives to improve the quality of their present lubricants.

It appears from the above that refiners will meet the demands for war time petroleum products as they did in the first world war. Post-war economics are not being considered. But, what of transportation for these products? Let us not forget that transportation constitutes the major problem in winning the battle (one British authority has estimated 70%). Therefore to avoid overtaxing of storage tanks, transportation departments of large refineries should assist the operating departments to see that tankers and tank cars are available to deliver fuels and lubricants to the battle fields.

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Wartime Refinery Process Plants To Be of Standard Design

REQUIREMENTS on the petroleum industry for new products for the prosecution of the war, and the problems imposed on refiners in manufacturing these supplies, in the light of scarcity of materials and other handicaps, were presented at the Economics Session Feb. 12 of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers. The session was a part of the program of the annual meeting of the A.I.M.E. in New York, Feb. 9-12.

The two speakers on practical refining subjects, among the 8 on the program, were James Thornton, the Lummus Co., New York, whose subject was, "Petroleum Refining Methods Available to Meet Wartime Demands", and Wright W. Gary, Director of Refining for the Office of Petroleum Co-ordinator at Washington, who spoke on "100-Octane Aviation Gasoline, Present and the Future".

The first paper mentioned above was presented to give a general picture of the newer processes which contractors are installing for refiners in a position to supply the raw materials. The paper was well received and active discussion and questioning followed. The speaker touched upon the great need for alkylation of iso-butane with butylene for the manufacture of 100-octane number aviation fuel. He stated that plants were being installed for the dehydrogenation of butane to butylene to supply some of the olefinic gases required.

Lubrication Plant Capacity Discussed

On the subject of lubrication, the speaker stated that the refiner was faced today with problems in supplying lubricants for aircraft and diesel engines and also for special landcraft which are equipped with internal combustion engines of the aircraft type. Additional capacity in new plants for the manufacture of these high duty lubricants or premium grade motor oils is in great demand, it was said. These extreme service lubricants have been a development of the last few years. It was suggested that refiners might co-operate by exchanging crudes in order to make available to those who have the refining equipment, the high grade crudes required for these lubricants.

Increased toluol capacity of the nitration grade quality is also very much in demand, it was said. It may be separated from crude oils from California or Borneo. It may also be manufactured by hydroforming, aromatization or cracking methods to produce high toluol concentrates by catalytic processes. After the war the products from this type of operation may be used for a regular grade gasoline in addition to providing a high quality aviation fuel.

The speaker emphasized that engineering tailor-made designs are not possible today, since, due to the time requirement, plants must be installed of standardized equipment. In addition, these plants must take ordinary steels, since the alloys are needed for armor plate and other war essentials.

Other factors that enter into the wartime requirements for design and construction of plants are that refrigeration and steam for fractionation be used as far as possible, the speaker said. The refining petroleum technology in the U. S. is well developed, it was brought out, and in most cases can call upon past experience to design efficient operating plants. In the future, the probability was seen that more and more propane will be used in ordinary motor fuel. Mr. Thornton stated that today bottled gas is principally a peacetime product and, therefore, domestic users might substitute kerosine for their stoves.

In connection with the natural gasoline plants it was suggested that, while they require a minimum of 300 bbls. of alkylate per day from approximately 700 bbls. of iso-butane and butylenes, smaller companies can contribute to the total requirements by shipping iso-butane to some community plant.

Mr. Gary spoke on 100-octane aviation gasoline. The interest in this paper was so great that, had his time permitted, he might still be on the platform answering questions. He did not read from a prepared paper, but gave an extemporaneous talk which was thought provoking and discussion stimulating.* He stated that, while aviation warfare was largely dependent upon the fuel, it was even more dependent upon the pilots to fly the planes. The methods of manufacture of 100-octane fuel have been rapidly developed. Six months ago we were producing 40,000 barrels per day of this type of fuel, and since that time this quantity rate has been tremendously increased, it was said. At present there are four essential components in aviation gasoline; blending agent, base stock, iso-pentane or its equivalent, and tetraethyl lead.

Mr. Gary stated that there were three process applications now being used to manufacture this essential fuel, and that refiners are co-operating with the government in developing the process which will be most useful after the war. One of the main problems is to get the maximum output per barrel of crude. Large units are necessary for economic reasons and, therefore, the new plants erected have been set at a minimum capacity of 1000 bbls. per day of 100-octane gasoline. A number of small refiners should be able to get together to make 100-octane fuel in a common plant, the speaker stated. The natural gasoline manufacturer and the refiner should also co-ordinate their facilities. At the present time, for example, we need 100,000 bbls. of new butane per day at minimum cost and time requirements, said Mr. Gary.

100-Octane Is Essential—Gary

"Is it necessary to make 100-octane fuel?", Mr. Gary was asked, after his talk. He replied, yes, since it provides 26% more power output for take-off, weight capacity, plane speed, and rate of climb, among other factors, over the standard previously employed. Airplanes to use better than 100-octane number fuel are being built and are tested with a rich mixture performance given by fuels of 100-octane number, plus tetraethyl lead.

One of the processes most useful for aviation gasoline is catalytic cracking, which provides all the raw materials for a finished product, Mr. Gary said. The expansion in this field has been rapid and we are now able to make base stocks and iso-butane, iso-pentane, and all olefins required. One of the largest size units so installed has a capacity for 10,000 barrels of 100-octane fuel per day. In addition, it provides the raw materials for synthetic rubber and toluene.

What of 100-octane fuel after the war?, was another question asked Mr. Gary. It is probable, in his opinion, that we may be limited in crude supply and, therefore, we may require gasoline quality in the future to obtain maximum mileage. It is a known fact that cars to use 100-octane fuel are being designed today, and it is probable that the octane race will continue, and, in addition, the flying age will require large volumes of aviation fuel, he said. This fuel will be required for large passenger and freight travel by air in the future and the U. S. will also be required to export large quantities of this product, Mr. Gary believes.

He stated that the refining industry is doing a grand

*See NPN Feb. 18th, pg. 20, for review of Mr. Gary's paper.

job in co-operation with the government and that the technical men from companies throughout the country were meeting in Washington and frankly discussing all their problems, and helping one another by exchanging base stocks and blending agents.

In answer to the question as to how much aviation fuel output could be increased by dropping the octane requirement 3 or 4 points, he said 15%. However, he stated that other methods are being used to increase output and that, after the war, synthesis of chemicals from olefinic gases, and manufacture of toluene, synthetic rubber and other products will be only a question of supplying the required equipment.

Synthetic Rubber Discussed

In answers to questions on synthetic rubber, Mr. Gary stated that, in order to produce 400,000 tons per year, it would be necessary to find new plant equipment and raw materials. Casinghead manufacturers can help, he said. While selected crudes are important for certain raw materials for wartime products, almost any crude can be used if catalytic methods are employed. In this connection, sulphur compounds cause trouble in the operation and should be removed. Many special pieces of equipment are needed for these new plants, such as instruments, blowers, compressors, electrical devices, and so on.

In answer to the question of the over supply of propane, Mr. Gary said that new methods for its utilization were being considered but that it may be used as a substitute for butane in motor fuels, for breaking in new engines, and for bottled gas.

Everett L. DeGolyer, Director of Conservation, in the Office of Petroleum Co-ordinator, at the same A.I.M.E. session, presented an interesting paper on what constitutes petroleum conservation today. He stated that, while conservation does not fit directly into the war effort, it may still be utilized to aim at larger yields of products from crude. Conservation is being forced upon some areas of the country because of the scarcity of oil well supplies. Mr. DeGolyer said the solution of this problem is wide spacing of wells to insure maximum recovery of oil. While in many producing areas one well may be drilled to 40 acres, in some cases this spacing would be too far apart; a notable example of which is the Spindletop field.

Holds Repressuring Essential

In connection with gas production, repressuring is essential, it was said. Since no accurate method has been determined for the estimation of gas reserves in this country, it is essential that the waste encountered by burning oil field gas be eliminated and that this gas be kept in the ground to allow oil to be produced. If there is no gas underground, no oil will be available, he said. A preliminary distribution estimate of the Texas gas fields showed that about 500,000,000 cu. ft. daily were being used as fuel, 900,000,000 cu. ft. converted into carbon black, and 750,000,000 cu. ft. were being burned as flares daily.

Mr. DeGolyer said that the oil field operator has a difficult task ahead of him in controlling oil flow, but that he has developed greatly in recent years, since, before conservation, he was only a practical man who produced to capacity. Proration has made the engineer important to the oil well operation. The speaker said he had recently visited two fields in New Mexico and in Mississippi, where he found old-time production methods wasteful of oil in operation. These fields, Hobbs and Tinsley, had original bottom-hole pressures of 1550 lbs. per sq. in. and 1850 respectively. He said nothing was being done about the 1000 lb. pressure loss that had developed.

The speaker stated that the Department of Interior always favored conservation and always will. The spacing outlined in the M-68 program has nothing to do with conservation, he said, but is only a plan for rationing oil well material, especially the steels required. It was proposed as a grant and not as a limitation. Wildcats come under this spacing program, which allows gas drilling with one well per 640 acres, or one oil well per 40 acres. If the producing companies require more wells to properly develop their acreage, they may apply to Washington for exceptions.

An active discussion followed presentation of the DeGolyer paper, in which producers and geologists attempted to have him explain how they may obtain steel to drill the new wells they were contemplating. Mr. DeGolyer replied that he did not have time to discuss steel priorities, since it was a big problem, but advised that exceptions are not hard to get in individual cases.

One discussion concerning the Appalachian field brought out that casings from old wells had to be pulled to utilize in new locations. Another operator cited his need for 650 tons of steel, most of it second-hand, but found it hard to get an exception, in spite of the fact the gas produced there goes to steel mills. One economist stated the conservation and proration go hand-in-hand and that prewar economy should not enter our thoughts today. Another thought pipelines from the wells to consuming centers was one of the most important requirements for steel, and that economy of the supply of crude must be considered in the shallow fields of Pennsylvania.

Another felt that conservation is not possible in the Eastern area where demand for lubricating oil from Pennsylvania crude is high and where transportation is good. Another pointed out the high quality of the natural gas in the eastern area, such as that from West Virginia, which is much more chemically valuable than natural gas in general.

Hold Chemists in the Army Of Production, ACS Urges

Shortages of technically trained men in the field of chemistry are impeding the nation's war effort, the American Chemical Society warns in making public a survey of 118 colleges and 29 chemical corporations.

Many chemical companies have stated that production is falling off and that future production of important materials is threatened by the withdrawal of trained chemists and chemical engineers from industry into the Army and Navy. The colleges reported an "appalling shortage" of trained individuals in chemistry and chemical engineering.

Essential industry in 1942 needs from 2000 to 3000 more chemists and chemical engineers than will be graduated or are otherwise available, and "no one knows whence they are to come," it was revealed in the canvass by the Society of corporations representing a cross-section of the chemical industry.

"Magnesium, aluminum, transparent plastics, rubber, explosives, medicinals, and innumerable minor but essential supplies needed by the Army, Navy, Signal, Sanitary and Medical Corps can be produced only under the guidance of trained engineering and chemical personnel," said the Society's statement. "Not only the finished product but also the raw materials going into smokeless powder, rubber, etc., can be produced only under the active control of experienced chemists and chemical engineers."

To make up this deficiency in technically trained men for the production army, the Society recommends to the War Production Board, the Army and the Navy the following program:

That definite and unambiguous instructions be issued to local draft boards and appeal boards that chemists and chemical engineers in the production army or in training therefor be retained in their present capacities.

That Reserve Officers now serving in the production army be not called to the combat forces and that those already called, where possible, be returned.

That trained chemists and chemical engineers in the Army, Navy and Marine Corps be assigned to clerical work, or released to the production army.

The survey of the shortage of technical manpower was made by the chemical society's Defense Committee, of which Prof. Roger Adams, head of the department of chemistry of the University of Illinois, is chairman. Members include Dr. Thomas Midgley, Jr., vice-president of Ethyl Gasoline Corp. and Dr. Robert E. Wilson, president of Pan American Petroleum & Transport Co.

605.2
615.2

ENGINEERING ECONOMICS Of Long Petroleum Pipelines

By Edgar G. Hill*

(Presented before Petroleum Division, American Institute of Mining and Metallurgical Engineers, Inc., New York, Feb. 12, 1942)

Edgar G. Hill

Fundamentals of design of petroleum pipelines from both economic and engineering viewpoints are presented by an authority who has had much experience in the construction of both oil and gas lines in this country and Canada. Indicating the timeliness of the discussion, there is included the economics of a crude line from Texas to the eastern seaboard, such as was proposed as a wartime emergency, also of the recently completed Plantation gasoline line in the Southeast.

The paper considers the effect on the unit transportation costs of volumes transported, as well as effect of the load factor at which the lines are operated and of the viscosity characteristics of the fluids handled. The economic functions of pipelines for refined products are discussed separately and the basic principles governing the flow of gasoline in lines, insofar as these principles differ from those applying to crude oil.

Contributions of as comprehensive a nature on this subject are infrequent in the literature of the petroleum industry. The author will be recalled by oil company executives as president of National Refining Co. in 1939, as well as through his present connection with the New York engineering concern of Ford, Bacon and Davis, Inc.

MUCH has been written and said recently about the methods used and materials and equipment employed in building the long tubes that criss-cross a great part of the United States, like the pattern of a spider's web. This paper will discuss the fundametals of design of these lines from the economic as well as the engineering viewpoint, pointing out the effect of the volumes transported, and the load factor at which they are operated, on the unit cost of transportation, as well as the effects on costs of the character of the fluids the lines are called upon to handle.

Generally speaking, crude-oil pipe lines carry oil from the producing fields to the refineries. Sometimes part of the journey is by pipe line to a coastal point and tank ships are employed for the rest of the trip.

The main lines of directional flow of crude oil through pipe lines in the United States are shown on Fig. 1, but this, of course, does not always show individual pipe lines.

*Vice-president of Ford, Bacon and Davis, Inc., New York, N. Y.

Basic Formula for Flow of Crude Oil

The laws governing the flow of crude oil through pipes are well known. The basic flow formula can be simply expressed as follows:

$$P = \frac{KQ^2G}{D^5}$$

or

$$Q^2 = \frac{PD^5}{KG}$$

or

$$Q = \sqrt{\frac{PD^5}{KG}}$$

where Q = delivery per 24 hr., bbl. (42 gal.)
P = pressure loss per square inch per mile, lb.
D = inside diameter of pipe, in.
K = a factor depending on the volume and characteristics of the fluid handled and the diameter of the pipe.
G = the specific gravity of the fluid handled, water being taken as 1 at 60° F.

Therefore, the quantity of crude oil that a pipe line can handle varies:

1. Directly as the square root of the pressure drop per mile in the line.
2. Directly as the square root of the fifth power of the inside diameter of the pipe.
3. Inversely as the square root of the specific gravity of the oil.
4. Inversely as the square root of the factor K.
5. Inversely as the square root of the line length.

Factor K is determined from a knowledge of the velocity of the oil in the line; i.e., the capacity to be handled and the diameter of pipe to be used, the viscosity of the oil—that is, its internal resistance to movement—and

Fig. 1. Directional flow of crude-oil and gasoline pipelines

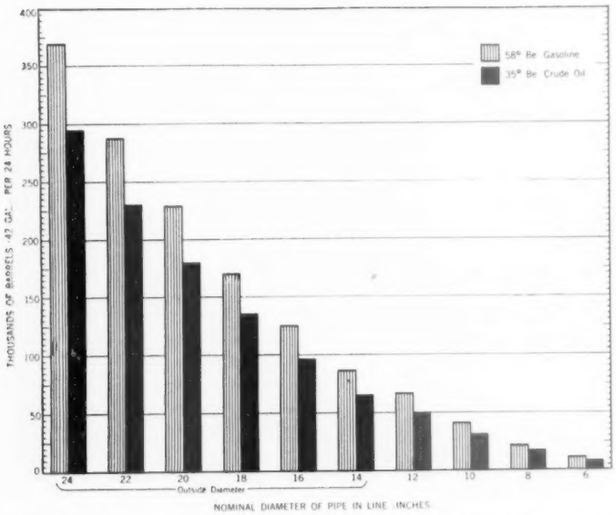
58° Be. Gasoline
35° Be. Crude Oil
THOUSANDS OF BARRELS (42 GAL.) PER 24 HOURS
Outside Diameter
NOMINAL DIAMETER OF PIPE IN LINE (INCHES)

Fig. 2. Approximate daily delivery capacity at 100% load factor of long oil and gasoline pipelines. (Operated with pressure drop of 15 lb. per sq. in. per mile and 900-lb. gauge station-discharge pressure, station fuel requirement included.)

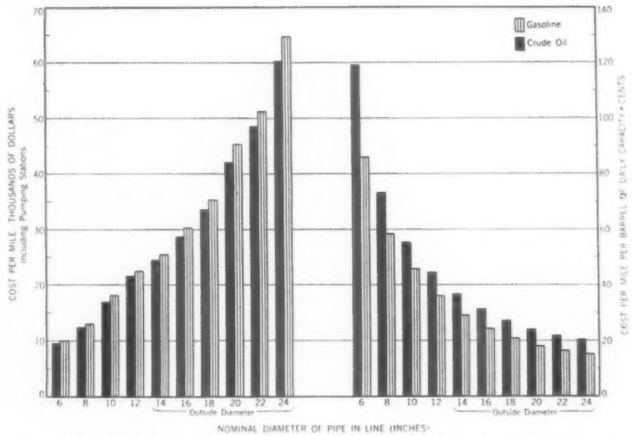
Gasoline
Crude Oil
COST PER MILE, THOUSANDS OF DOLLARS, including Pumping Stations
COST PER MILE PER BARREL OF DAILY CAPACITY, CENTS
Outside Diameter
NOMINAL DIAMETER OF PIPE IN LINE (INCHES)

Fig. 3. Approximate cost per mile of long oil and gasoline pipelines, including pumping stations. (Expressed per mile of line and per mile of line per barrel of daily capacity. Line capacity computed with 15 lb. per mile pressure drop.)

the density of the oil. In ordinary practice, for oils of moderate viscosity, factor K usually ranges from 0.0024 to 0.0013 for a 6-in. line to 0.0013 to 0.0015 for a 24-in. line.

The usual pressure at the initial point is 800 to 1000 lb. per sq. in., 900 lb. being a fair average. Pumping stations are spaced along the lines at intervals of 25 to 75 miles. These stations restore the pressure that has been lost because of the friction of the fluid in the pipes or the effect of varying elevations.

The pressure drop per mile ranges from as much as 30 lb., on a line operating at high capacity with stations closely spaced, to as little as 10 lb. on lines where provision has been made, for substantial later increase in capacity through addition of intermediate stations, or where the full economic capacity of the line is not being utilized. For the computation shown on the charts, Figs. 2 and 3, a pressure drop of 15 lb. per sq. in. per mile has been adopted, not because it is always the most economical but simply because it is satisfactory for comparative purposes.

Applications of Basic Flow Formula

The determination of the most economical pressure drop per mile in a long pipe line requires analysis in each individual case. It depends to some extent on the probable increase in capacity that may be needed later. If this is believed to be considerable, and not too long deferred, the line usually will be designed initially with a fairly low pressure drop and wide station spacing. The capacity can then be increased up to about 140 per cent of the initial capacity by doubling the number of pumping stations and increasing their installed horsepower proportionately to the increased capacity, without adding any more pipe.

On the other hand, should the price of pipe or the cost of construction be abnormally high at the time when or the place where the line is to be built, it might be found advisable to use a higher pressure drop per mile, which would require less pipe per unit of capacity but more pumping machinery. In such cases any additional capacity needed later would probably be provided by looping the line part way with a parallel pipe, and also adding to the station horsepower without increasing the number of stations. Thus the relationship between the cost of pipe in place and the cost of power is also an important consideration.

Assume that a long pipe line is to be built to handle 17,250 bbl. of 35° Be. crude oil per 24 hr., and that this oil has a Saybolt viscosity at 60° F. of 150 sec., which is a good fluid crude. Experience indicates that an 8-in. line probably will be needed for these conditions, and the problem becomes that of determining the pressure drop per mile in an 8-in. line, which fixes the spacing of the pumping stations. If the trial analysis obviously gives too low a pressure drop per mile, computations will be made for a 6-in. line, the next smaller commercial pipe size.

From our tables and charts, the factor K for these conditions of volume, 8-in. pipe size and viscosity is determined as 0.00213 and the formula is set up as follows (35° Be. crude having a specific gravity of 0.85):

$$P = \frac{0.00213 \times 17{,}250^2 \times 0.85}{8.071^5}$$

P = 15.7 lb. per mile; say 16 lb. for convenience.

In flat country then, if the discharge pressure at stations is to be 900 lb. and the intake at the next station down the line 100 lb., the stations will be spaced

$$\frac{900 - 100}{16} = 50 \text{ miles apart.}$$

Where lines are built in mountainous or rough country, an accurate profile of the pipe line is essential because the difference in elevation of the successive stations must be taken into account as well as the friction loss in determining the station spacing. However, it is assumed here that all stations are at the same elevation, or approximately so.

Horsepower Required for Pumping

The power required in each station is computed as follows:

$$HP = \frac{\text{Gallons per Minute Pumped} \times \text{Net Pressure in Lb. per Sq. In.} \times 2.31}{3960 \times E}$$

E is the efficiency of the pumps employed.

Pumping station horsepower therefore is computed as follows:

$$\frac{17{,}250 \times 42}{1440} = 503 \text{ g.p.m}$$

Pumps having an efficiency of 75 per cent will be used, therefore

$$HP = \frac{503 \times 800 \times 2.31}{2970} = 313$$

to which will be added 10 to 20 per cent as a safety factor and 350 to 375 hp. of drivers will be used in each pumping

From all kinds of crude

WASHINGTON, JAN. 6—Increased production of high grade crudes particularly suited to refining for aviation gasoline was urged today on all states producing such petroleum as another step in the government's effort to increase production of 100 octane gasoline for expanding military needs — CHICAGO JOURNAL OF COMMERCE, January 6, 1942

American refiners could never make enough hundred-octane gasoline if only high grade crude could produce it Because the supply of such crude is limited—demand for such gasoline is unlimited

Lack of high-grade crude need not keep any refiner from doing his part in the aviation-gasoline production program

Universal catalytic refining processes produce the components of hundred-octane gasoline effectively and in volume from high-grade crudes Furthermore, they convert low-grade crude—any kind of crude—into valuable charging stocks for the production of more hundred-octane gasoline

These processes are tested and proved They are ready to go

They are available to every refiner who can use them, under license from U.O.P.

And the practical "know how" of Universal refining specialists will make them work their best for you

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

THE REFINERS INSTITUTE OF PETROLEUM TECHNOLOGY

station, depending on the type used, whether electric or Diesel.

Comparative Costs of Lines

The line, then, is an 8-in. line operating at 900-lb. pressure with pumping stations spaced 50 miles apart, each containing 350 to 375 hp. of pumps plus any spare capacity desired.

With pipe costing $80 per ton, including freight, and the line installed in average pipe-line country from a construction standpoint, the cost of this line per 100 miles would approximate $1,262,000, including the two pumping stations and other appurtenant facilities necessary to a pipeline project. This is equivalent to $12,620 per mile, or 73c per mile per barrel of daily capacity.

We will now refigure the design of this line based on the use of 6-in. pipe operating at the same 900-lb. pressure, to determine comparative over-all cost.

The factor K for a 6-in. line handling 17,250 bbl. of the same crude per day is 0.00196 and the formula is set up:

$$P = \frac{0.00196 \times 17{,}250^2 \times 0.85}{6.065^5}$$

$$P = 60 \text{ lb.}$$

The station spacing is thus

$$\frac{900 - 100}{60} = 13.3 \text{ miles}$$

requiring 7½ pumping stations in 100 miles, or 15 in 200 miles.

The cost of the project for 200 miles of line, then, is:

200 miles of pipe line at $7500	$1,500,000
15 pumping stations, 350 hp. each	1,260,000
Other facilities	220,000
Total per 200 miles	$2,980,000
Average per mile	$ 14,900

A 6-in. line, therefore, is too small to handle economically 17,250 bbl. per day, not only from the standpoint of first cost but also from the standpoint of over-all operating costs, because of the large number of pumping stations required, all of which will require operating labor and will either use oil from the line for fuel or will operate on purchased energy of some kind. A 10-in. line would handle this volume easily with only one pumping station in 160 miles but the first cost of a 10-in. line with fewer stations would be so much higher than the cost of an 8-in. line with two pumping stations that an 8-in. line would be constructed.

There is, however, a range of capacities, say from 20,000 to 25,000 bbl. per day, where the choice between an 8-in. and a 10-in. line would have to be determined after a very careful calculation of present and future expected over-all costs including capital charges and operating expenses.

Capacities of Lines and Cost per Mile

Fig. 2 shows the computed daily capacities, in barrels, of long pipe lines of various diameters, when handling 35° Be. crude oil of moderate viscosity (150 S.U.S. at 60° F.) and when handling 58° Be. gravity gasoline, the computed line capacities being based on station discharge pressures of 900 lb. and a pressure drop of 15 lb. per mile.

Fig. 3 shows the estimated approximate total investment cost per mile, including pumping stations, of crude-oil and gasoline lines from 6-in. to 24-in. diameter, inclusive; also, the cost per mile per barrel of daily capacity of such lines. The two charts of Fig. 3 are vital to an understanding of this paper because they show that while large pipe lines cost somewhat more per inch of diameter than small lines they cost much less when considered on a capacity basis.

Effect of Viscosity on Over-all Transportation Costs

Most crude oils handled by long pipe lines are of moderate viscosity; that is, they are commonly known as light crudes, and usually have a high total gasoline content. A few crudes are so viscous that they must be heated before they can be pumped; and others that are fluid at summer temperatures become rapidly more viscous as the temperature lowers. When such oils are pumped in cold climates they must be heated or the delivery capacity of the line is sharply reduced.

In determining factor K in the basic pipe-line formula,

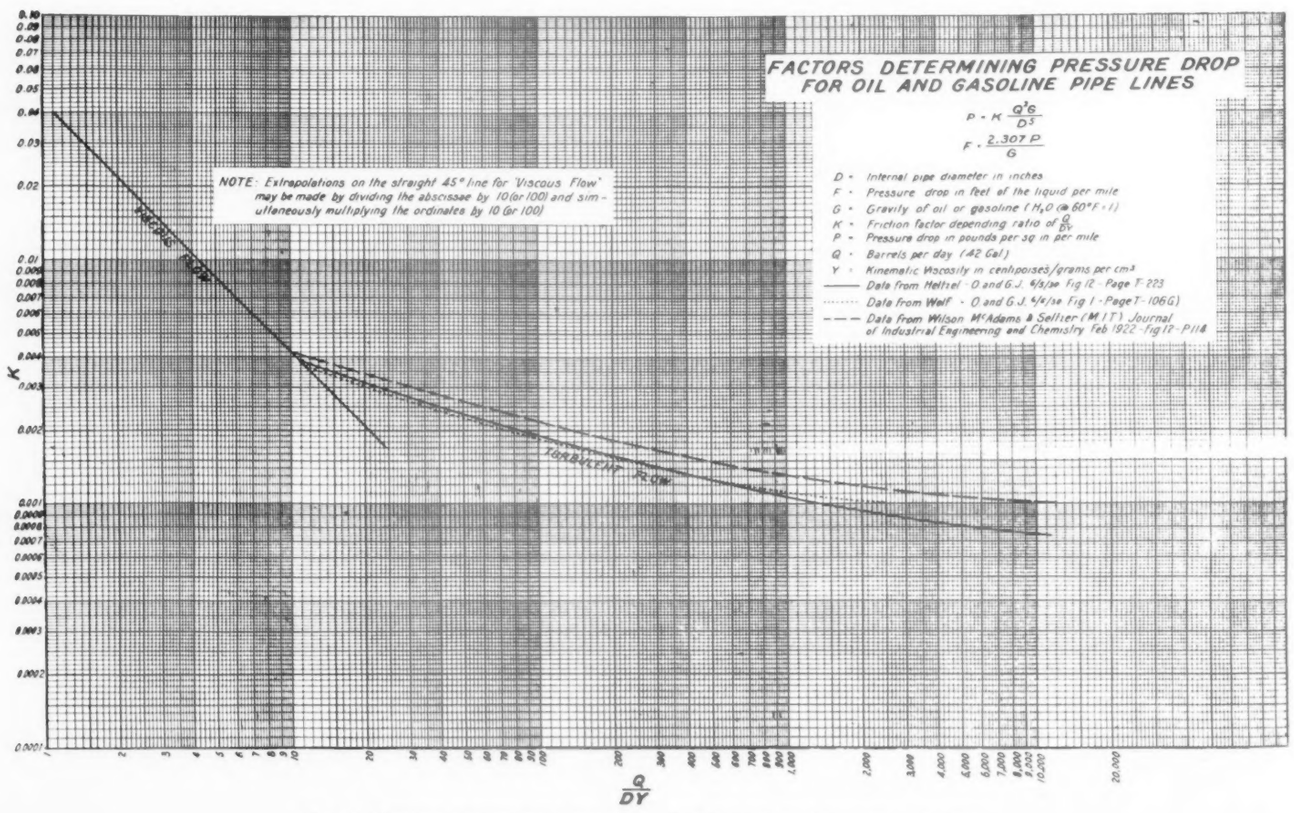
FACTORS DETERMINING PRESSURE DROP
FOR OIL AND GASOLINE PIPE LINES
$P = K \frac{Q^2 G}{D^5}$
$F = \frac{2.307\,P}{G}$
D = Internal pipe diameter in inches
F = Pressure drop in feet of the liquid per mile
G = Gravity of oil or gasoline (H_2O @ 60°F = 1)
K = Friction factor depending ratio of $\frac{Q}{DY}$
P = Pressure drop in pounds per sq in per mile
Q = Barrels per day (42 Gal.)
Y = Kinematic Viscosity in centipoises/grams per cm3
Data from Heltzel - O. and G.J. 4/5/30 Fig 12 - Page T-223
Data from Wolf - O. and G.J. 4/4/30 Fig 1 - Page T-106G)
Data from Wilson McAdams & Seltzer (M.I.T.) Journal of Industrial Engineering and Chemistry Feb 1922 - Fig 12 - P118
NOTE: Extrapolations on the straight 45° line for 'Viscous Flow' may be made by dividing the abscissae by 10 (or 100) and simultaneously multiplying the ordinates by 10 (or 100)
TURBULENT FLOW
K
$\frac{Q}{DY}$

Fig. 4. Factors determining pressure drop for oil and gasoline pipelines

the kinematic viscosity (i.e., the ratio of the absolute viscosity to the density of the crude oil to be pumped) is required. This is determined by the use of the Saybolt Universal viscosimeter. The figure so determined is used in the expression

$$\frac{Q}{DY}$$

where Q = barrels transported for 24 hours,
D = internal diameter of pipe in inches,
Y = kinematic viscosity of oil in centipoises divided by density in grams per cubic centimeter.

After $\frac{Q}{DY}$ is determined the factor K may be determined by the use of a chart, Fig. 4, which shows the relationship between $\frac{Q}{DY}$ and K for any value of $\frac{Q}{DY}$.

To show the effect of viscosity on the pressure drop in pounds per square inch per mile of pipe line and, consequently, on the horsepower required to move the oil through the line, we will determine the station spacing and total horsepower required per 100 miles of line for two crudes of different viscosities but of the same specific gravity, using the 8-in. line handling 17,250 bbl. per day.

For crude A,

$$Q = 17{,}250$$
$$D = 8.071$$

Viscosity = 150 Saybolt Universal Seconds at 60° F.

From *Technologic Paper* 112 of the National Bureau of Standards (by W. H. Herschel), page 19, Eq. 13, a curve has been developed showing the relation between the S.U.S. viscosity and the kinematic velocity Y. From this curve, using S.U.S. at 150:

$$Y = 31.5$$
$$\frac{Q}{DY} = \frac{17{,}250}{8.071 \times 31.5} = 68$$

where

$$\frac{Q}{DY} = 68$$
$$K = 0.00213$$

and by substituting the value of K so determined in the basic formula

$$P = \frac{KQ^2G}{D^5}$$

$$P = 15.7 \text{ or, say, } 16 \text{ lb. per mile}$$

Thus, a 350-hp. station will be needed every 50 miles to handle this oil through an 8-in. line, two stations on a 100-mile line and four on a 200-mile line.

Crude B, however, is more viscous, with a Saybolt viscosity of 300 at 60° F. Y then becomes 65 and

$$\frac{Q}{DY} = \frac{17{,}250}{8.071 \times 65} = 32.9$$

From the curve of Fig. 4 a value for K is found of 0.0027 corresponding to 32.9 for $\frac{Q}{DY}$. The basic formula then becomes:

$$P = \frac{0.0027 \times 17{,}250^2 \times 0.85}{8.071^5} = 20$$

The station spacing then is

$$\frac{900 - 100}{20} = 40 \text{ miles}$$

and while the power required in each station is substantially unchanged, particularly if reciprocating pumps are used, five pumping stations will be needed in 200 miles of line with the 300 viscosity crude, against four with the 150 viscosity crude, an increase of at least 25 per cent in the pumping plant required to move the same amount of oil through line of the same size. Not only is the first cost increased by the additional stations but the operating cost is also greater, owing to the increased pumping-station labor, fuel, supplies and maintenance required.

If the line had already been built with a 50-mile station spacing, we would try to increase the station discharge pressure to 1100 lb., which would handle 17,250 bbl. of 300 viscosity crude. If that could not be done, the pressure could be held at 900 lb. and the pumps slowed down to deliver

$\sqrt{16/20}$ or 89.5 per cent of 17,250 bbl., or 15,440 bbl. daily. In any event, the transportation cost per barrel is increased by the higher viscosity of the oil.

In almost all long lines, except those in the far South, the increased viscosity of most crude oil brought about by the lowered temperature in winter necessitates increased station pressure during winter months for normal deliveries, the alternative being reduced deliveries at the same station pressure. Some crudes, however, have almost a constant viscosity through operating temperature ranges. If these crudes are available for mixing with crudes having high viscosity at low temperature, better operating efficiency in winter will naturally follow.

Basic Costs of Transporting Crude Oil

Most crude-oil pipe lines are under the jurisdiction of the Interstate Commerce Commission, which publishes in some detail the operating statistics of all the lines under its control. These published data show that for the larger system the gross revenue, or barrelage handled times the tariff, averaged almost exactly 6c per barrel per 100 miles in the year 1937, the latest year for which complete figures are available. A barrel of crude oil weighs about 300 lb., so that 6c per barrel per 100 miles is equivalent to 4 mills per ton-mile, which may be taken as a measure of the basic cost of transporting crude oil by the larger carriers in 1937, including depreciation and return on investment. This is much less than comparable railroad freight rates.

There have been recent reductions in pipe-line tariffs, which amount in some cases to as much as 20 per cent, and it is probable that at the present time 5c per barrel per 100 miles, or 3 1/3 mills per ton-mile, is a more accurate figure.

Effect on Costs of Increased Line Size

The large lines considered in arriving at this base cost are 10 and 12 in. in diameter. If by combining the crude requirements of a number of refiners, the capacity to be handled by a pipe line can be increased fivefold or sixfold over the rated capacity of any one of the present large lines—say to 200,000 or 250,000 bbl. daily—line diameters of 20 to 24 in. become possible.

This was the situation presented by the oil companies that sponsored the large crude-oil line from Texas to the Eastern Seaboard, construction of which was proposed last year in an effort to replace the tanker capacity that had been diverted from the usual routes to the service of Great Britain, but which was not approved by the S.P.A.B. on the ground that the large tonnage of steel required should be put to better use during the present emergency.

Without going into the merits of the positions taken by those who argued for and against this line, it is easy to show that the cost per barrel-mile for transporting oil from Texas to the Philadelphia or New York areas by such a system would be much lower than anything yet attained in pipe-line operation.

The principal items of cost entering into pipe-line tariffs are routine operating expenses, including pumping costs, maintenance, property taxes, depreciation and return on investment. Of these items, maintenance, property taxes, depreciation and return are all functions of capital investment. Many of the routine operating expenses are almost the same regardless of the diameter of the line—for example, it costs just about as much to dispatch and patrol a 12-in. line as a 24-in. line. Pumping costs, with the same station spacing, would not differ much for the labor required at the stations, whether medium size or large pumps were employed, and certainly would not increase more than in proportion to the diameter of the line. Administration costs would hardly increase in proportion to the diameter of the line.

Fuel at the station, however, would be consumed in proportion to the volume handled and would be about six times as much in total for a 24-in. as for a 12-in. line; but it would be about the same per barrel-mile, as on

Fig. 3 it is shown that while the cost per mile of a 24-in. line is nearly three times that of a 12-line, its carrying capacity is nearly six times as much when operated under the same conditions of pressure and station spacing and handling crude of the same characteristics.

To be specific, the cost of a 12-in. line with a capacity of 50,000 bbl. of crude per day is estimated at $21,900 per mile at today's price levels, equivalent to 43.8c per mile per barrel of daily capacity.

A 24-in. line with a daily capacity of 295,000 bbl. of the same crude is estimated to cost $60,200 per mile, equivalent to only 20.4c per mile per barrel of daily capacity. The capital costs of transporting oil through the 24-in. line therefore are only 46.6 per cent as much per barrel of capacity as for a 12-in. line, and in comparison with capital costs of transporting oil through 8 and 10-in. lines, the economy in the use of lines of very large capacity is even more pronounced. This statement assumes, of course, that the same annual rates of return on investment, taxes, depreciation, amortization and maintenance are applicable in all cases.

The routine operating expenses in dollars, with the exception of pumping cost for the 24-in. line, might possibly be as much as 150 per cent of those of the 12-in., but on a per barrel daily capacity basis would then only be about one fourth as much, and the same should hold true of administration costs. Of the components of the total cost, then only one item, fuel, would be the same on a per barrel basis, the other items being much less for the large line.

Fuel cost normally would be about one third of the total of all the routine operating costs on a big line, so that on a per barrel basis the total operating costs of the 24-in. line including fuel but excluding capital charges should be about 50 per cent of the costs on a 12-in. line. As the capital costs of the 24-in. line per barrel-mile have been computed to be about one half those of the 12-in. line, it is obvious that the over-all operating costs per barrel-mile for a 24-in. line would be about half those of a 12-in. line—or, say, 2½c per barrel per 100 miles—from which it can be readily deduced that as against the present tariff of 67c per barrel charged by the pipeline carriers from the East Texas field to the New York area, a distance of about 1400 miles, the corresponding tariff on the proposed 24-in. line would probably not have exceeded 35c per barrel at a reasonably good load factor.

The proposed large line from East Texas to New York, if built, would thus accomplish the delivery of large volumes of Texas and Mid-Continent crude oil to the Eastern Seaboard refineries at transportation costs not far from those that existed before the present emergency, as most of this oil used by the Eastern Seaboard refineries traveled via pipe line from the fields to the Gulf Coast and thence by tanker to destination, the combined pipeline and tanker transportation cost for this movement being around 35c per barrel in normal times.

Functions of Pipe Lines for Refined Products

The refined-products line, or gasoline pipe line, as it is usually termed, is really part of the marketing facilities of the owning company or companies. Long products lines date from about 1930, when Phillips Petroleum Co. built a 750-mile 8-in. carrier from its refinery at Borger, Texas, to the St. Louis area, and the former crude line of Tuscarora Pipe Line Co., which for many years had brought crude oil eastward into the New York area, was converted into a products line and its direction of flow reversed. Since that date, construction of products lines has proceeded at an accelerated rate and by the end of this year there will probably be about 13,000 miles of such lines in service.

Fundamentally, the purpose of a products line is either to enable a refiner whose plant is a long distance away from volume marketing areas to lay down his products in those areas on a cost basis that will allow him to compete on fairly even terms with refiners in or near such areas, or to enable him to compete on fairly even terms with other refiners also far from the market area, who may already have built products lines or who may have the advantage of water transportation. If it were not for such low-cost carriers of refined products as pipe lines and tank vessels, large refineries would have difficulty in existing except close to areas of great consumption, as they would be wholly dependent on the higher-cost railroad transportation for their products to remote market areas. As it now stands, a large refinery in the Panhandle of Texas, 1000 miles away, can profitably take advantage of low production costs at its location only because a products pipe line connects it with large consumer demand in cities as far removed as St. Louis and Chicago, and make possible a terminal from which its products can move cheaply by water to other points on the Great Lakes.

Likewise, refiners on the Atlantic Seaboard can ship their products to markets in western Pennsylvania, Ohio and western New York, where they would have great difficulty in competing with refiners situated on the Ohio and Mississippi Rivers or on the Great Lakes were it not that their products lines to those markets afford cheap transportation of finished goods and their Eastern Seaboard refineries are supplied with crude largely by low-cost tank steamships.

Along the route of these products lines are terminals containing substantial storage capacity, from which deliveries can be made to the bulk plants in the surrounding areas by tank car or truck transport.

The broken lines on the map, Fig. 1, show the directional flow of much of the gasoline and finished products now handled by pipe lines. Most of the lines originate at refineries but some, such as the lines extending from eastern Long Island Sound into New England and the southeastern line from Port St. Joe, Fla., to Atlanta, Ga., and Chattanooga, Tenn., originate at terminals located on tidewater, to which the products are delivered by tank steamer from refineries that may be hundreds of miles away.

The Plantation Pipe Line, just completed in the Southeast, is one of the few common carriers of products. Most of the others are operated as plant facilities. It happens that the Plantation line serves markets that formerly were served by a combination of tanker, tank car and truck transport, and thus will supplant a certain amount of tanker capacity; and the same is doubtless true of the Southeastern Line. The Plantation Pipe Line originates at Baton Rouge at a terminal at the refinery of one of its owners, which also is equipped to receive the products of others into the same terminal direct from the tanker that has brought them from distant refineries.

All this construction of gasoline pipe lines definitely cuts the cost of moving finished products to market, and so permits competition in marketing areas that otherwise would not exist.

Handling Different Products Through Pipe Lines

It has been found through experience that different refined products can be moved in slugs through a pipe line if sufficient velocity of flow in the line is maintained to keep the different fluids from mixing and contaminating each other. There will necessarily be some mixing at the zone of contact between the different products, but careful operation holds this to a low percentage. Badly contaminated products are either degraded and marketed as such, or shipped back to the refinery in tank cars for reprocessing. There is some ground for belief that more contamination relatively will be experienced in the operation of large-diameter lines than in the smaller ones, which operate satisfactorily when handling different products without the use of water or other separating medium. A dispatching system, comparing in exactness of operation with that used by the railroads, is necessary for efficient operation where different products are handled, because the arrival of the different products at the various points where they are to leave the pipe line must be figured in advance almost to the second and the terminal operators must be ready to handle them the moment they arrive.

The basic principles that govern the handling of gaso-

One of a series of advertisements telling how American Industry is speeding up production

Taylor Instruments are helping to keep it filled!

IT'S AMERICA'S JOB to furnish the food that will help win the war. We've got to feed millions of fighting men (our own forces, even now, are eating 9 million pounds of food a day!). We've got to feed the American people. It's our giant's job to supply much of the food that our war allies will need—now, and afterwards. The U. S. food basket must be bottomless and brimming over.

A great part of these billions of pounds of food will have to be good foods in cans. It can be supplied—because this nation's food industry can turn out fine canned foods fast. The majority of instrument-controlled food plants in the United States are Taylor-equipped. Taylor Instruments automatically control temperatures and pressures, and hold them to a precise processing schedule. Temperatures can't jump too high, overcooking and destroying food values—or slump too low, improperly sterilizing the food. Fluctuating pressures during the cooking don't get the chance to damage cans and contents.

Food plants working on Government contracts have stepped up their production greatly during the last few months by adding hundreds of Taylor-controlled retorts and cookers to their production lines. These headlines will give you a glimpse:

Midwestern Packing Plant Installs Taylor Control Systems to Convert Thousands of Hogs Each Week into Hundreds of Thousands of Pounds of Canned Luncheon Loaves, Sausages, and Other Pork Products

In Another City Same Packer Installs Taylor Control Systems in New Plant That Will Pack 1,000,000 Pounds of Meat Weekly

Plant Puts Large Number of Taylor-controlled Retorts into Production to Process ½ Million Pounds of Pork Per Week

And Government quotas for canned vegetables in 1942 are being stepped up nearly 100%! Throughout the whole food industry, Taylor Instruments will be doing the biggest job ever, in 1942.

You probably have the same problem the food people have — meeting rigid Government standards of quality, quantity, price. You *can* meet them, by using Taylor Instruments in processing *your* product. Taylor Instruments will help *you* produce top quality at top speed. Taylor Instruments will help *you* cut costs and prevent waste—to assure profits in these times of pegged prices. Taylor Instruments will help solve a shortage of man-power—they work automatically, precisely, tirelessly.

Every American Industry today needs the assistance of Taylor Instruments in speeding up *all* production. Taylor Instruments should be helping you do *your* part toward winning the war. What are your specific needs? Let us help *you*. Taylor Instrument Companies, Rochester, N.Y., and Toronto, Canada. Makers of the famous "Not 1 but 5 Fulscope Controller."

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Indicating Recording Controlling

TEMPERATURE, PRESSURE, FLOW *and* LEVEL INSTRUMENTS

★ KEEP ON BUYING U. S. DEFENSE BONDS AND STAMPS ★

line and other refined petroleum products through pipe lines are really the same as those governing the flow and handling of crude oil.

It happens that viscosities of the refined products are not determined in the same manner as for crude oil and it also happens that when the early gasoline lines were built not much was known precisely about the friction losses that would be realized, so that the lines were designed, generally speaking, as though they were to handle water and when the results of the lines' operations were determined the basic constant developed was the factor C in the Hazen-Williams formula covering the flow of water through long pipes. This formula used with varying constants has been the standard in determining the size of gasoline and products carriers and the constant C has been often taken at 130 for the average gasoline. Sometimes C has been determined for new lines to be initially higher than 130, but it has often been experienced that, owing to internal corrosion, rather startling decreases in the capacity of some of the lines have developed after only a few years of operation.

Daniel E. Sullivan, Chief Engineer of the Pure Oil Co., has outlined, in a very interesting paper presented before the Division of Production at the Annual Meeting of the American Petroleum Institute in San Francisco in November 1941, the experience of his company with internal corrosion on the 6-in. pipe line of the Detroit Southern Pipe Line Co., the gasoline line between Toledo and Detroit that was built in 1933. Mr. Sullivan states that initially on this line the constant C was 143.4 but that after 2½ years of operation the capacity of the line fell off to 74 per cent of its initial capacity and the constant C declined to 110.2. Fortunately, it has been possible to restore the capacity of this line to somewhat better than its original volume by the frequent use of an ingenious cleaning device, which removes the tuberculation from the interior wall of the pipe and also takes out much of the water, which is believed to be the basic cause of the corrosion trouble.

The Hazen-Williams formula for the flow of water is:

$$v = C \times r^{0.63} \times s^{0.54} \times 0.001^{-0.04}$$

where v = velocity per second, ft.,

c = a constant for a given pipe, the numerical value of which is affected by the roughness of the wetted inside of the pipe,

r = the mean hydraulic radius (diameter ÷ 4)

s = the slope of the pipe (pressure drop in feet of fluid ÷ length)

Using the foregoing formula as a basis and substituting the value of 130 for C, introducing the specific gravity of gasoline and expressing the rate of flow in barrels per hour, the Walworth Company, Inc., suggests the following modification* of the basic formula:

$$p^{0.54} = Q \times g^{0.54} \times F$$

in which p = pressure drop due to friction, lb. per sq. in. per mile,

Q = barrels of gasoline flowing per hour,

g = specific gravity of flowing gasoline referred to water as 1.0,

F = a factor that is a function of the inside diameter of the pipe (d, in inches) with which the formula constant is combined. Its value is $\frac{1.25}{d^{2.63}}$.

For convenience in the use of the formula, values of F for nominal sizes of A.P.I. line pipe are tabulated in Table 1.

This Walworth conversion of the basic Hazen-Williams formula presents a very convenient basis of computing the flow of gasoline through pipe lines, using a median figure of 130 for the friction constant.

In considering the economics of crude-oil and gasoline pipe lines, it cannot be too strongly emphasized that they must be kept internally clean to be operated efficiently.

*See page 499, Catalog 89, Walworth Company, Inc.

Table 1.—Numerical Value of Factor F

Nominal Pipe Size A.P.I. Line Pipe, In.	Numerical Value of Factor F
1	1102.3 × 10^{-3}
1¼	535.79 × 10^{-3}
1½	357.24 × 10^{-3}
2	185.18 × 10^{-3}
2½	116.06 × 10^{-3}
3	65.548 × 10^{-3}
3½	44.723 × 10^{-3}
4	32.068 × 10^{-3}
5	17.698 × 10^{-3}
6	10.917 × 10^{-3}
8	5.3033 × 10^{-3}
10	2.9151 × 10^{-3}
12	1.8142 × 10^{-3}
14 o.d.	1.3979 × 10^{-3}
15 o.d.	1.1542 × 10^{-3}
16 o.d.	966.0 × 10^{-6}
17 o.d.	822.3 × 10^{-6}
18 o.d.	706.2 × 10^{-6}
20 o.d.	528.5 × 10^{-6}

Deposits of paraffin or asphalt, which form on the interior of crude-oil pipe lines are removed by the use of scrapers passed through the line with the crude from station to station. These scrapers operate through the cutting action of a multiplicity of curved steel blades in the cutterhead and are forced through the line by the action of the fluid on leather or fiber disks incorporated in the body of the scraper.

The tubercles that form on the inside of gasoline pipe lines are similar to those found on the inside of water pipes, and in their removal the conventional type of scraper is useless. A plug formed of alternate rings of circular wire brushes and rubber disks, as described by Mr. Sullivan in the paper cited, seems to be the best means yet devised of mechanically cleaning the inside of gasoline lines. Much work has been done and is being done toward the development and effective use of both liquid corrosion inhibitors introduced into the fluid stream and other chemical means of preventing this internal corrosion.

Figs. 2 and 3 show that a pipe line of a given diameter normally passes more gasoline than crude oil because of the lower viscosity and gravity of the refined products. The capacities shown for gasoline on these charts were computed by the use of the Walworth formula, using gasoline of 58° Be. gravity. The increase in capacity possibly necessitates correspondingly greater horsepower in the pumping stations to realize it, so that the over-all cost of a gasoline line of a given diameter usually is somewhat greater than that of a crude-oil line designed for the same basic pressure drop per mile and, likewise, a very similar relation exists between the cost per mile of the various sizes of gasoline lines and crude-oil lines, and a similar reduction in the cost per barrel of capacity is shown for the large lines handling gasoline and for those handling crude oil.

It is basically necessary, therefore, to handle large volumes in order to obtain the lowest costs. It is undoubtedly this fact that has caused the cooperation between otherwise competitive interests in the construction of refined-products pipe lines such as the Great Lakes Pipe Line system, the Detroit Southern Pipe Line, the Plantation Pipe Line between Baton Rouge and Greensboro, N. C., and the Southeastern Pipe Line, which has recently been built between Port St. Joe, Fla., and Chattanooga, Tenn. It is a fair assumption that no one of the companies that have united in the construction of these lines had enough market for its own products in the territory served by the line to make a wholly owned line show enough savings over former transportation costs to be economically justifiable.

Importance of High Load Factor

The great influence of load factor on over-all costs of pipe-line transportation is primarily because it costs about the same to own and operate a pipe line of a given size and length regardless of the percentage of full capacity at which the line is being used. The capital costs, of course, are constant in dollars and the same applies to much of the administrative costs and to most items of pipe-line routine operation and maintenance. The pumping-station fuel will vary about in proportion to the quantities handled and the same is true to some extent of maintenance of

pumping machinery, but probably 80 per cent of the total operating costs of a pipe-line system, including capital charges, are entirely independent of the volume handled.

It will be readily seen, therefore, that in order to realize the full potentialities of pipe lines in reducing the transportation costs of petroleum and its products, not only are large-diameter lines effective but such lines must be operated at high load factor; that is, the average daily throughput divided by the throughput for which the line was designed must show a quotient representing a load factor as near unity as possible. Storage tanks along route are commonly used to increase load factor and the use of products lines to handle furnace oil in the winter, when gasoline consumption is usually lighter, is, of course, a valuable help in the same direction.

This means that in designing pipe lines great care should be taken to make sure that they are built not so large in comparison with the annual volume of crude or products expected to be handled through them that it will be difficult to operate them under an annual load factor of 75 per cent or better.

A large line that would operate at 100 per cent load factor with a cost of say 3c per barrel per 100 miles would probably show a cost of about 3.25c at 90 per cent load factor, 3.63c at 75 per cent and 5.4c at 50 per cent, so that good load factor is fully as important as large volume in reducing costs of pipe-line transportation.

New Patents

Compiled by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh Stret, NW, Washington, D. C., from whom copies may be obtained at rate of 25c each. State number of patent and name of inventor when ordering.

Process for treating hydrocarbons—Clarence D. Coulter, Los Angeles, and Edwin R. Cox, Huntington Park, Calif., assignors to Southwestern Engineering Co. Filed Dec. 17, 1938. No. 2,271,761.

Treatment of hydrocarbons—Arthur R. Goldsby, Port Arthur, Tex., assignor to Texas Co. Filed Feb. 17, 1938. No. 2,271,860.

Method of purifying used oil—Charles M. Ambler, Jr., Jenkintown, Pa., assignor to Sharples Corp. Filed Aug. 9, 1939. No. 2,271,882.

Process for polymerization of gaseous olefins—Emil Reunecke and Herbert Grasshof, Germany, assignors to William Currie, New York, N. Y. Filed Apr. 29, 1938. No. 2,271,942.

Catalyst—Gerardus H. Visser and Willem F. Engel, Amsterdam, Netherlands, assignors to Shell Development Co. Filed Sept. 13, 1939. No. 2,271,751.

Modified motor fuel and process of making same—Sol Shappirio, Washington, D. C. Filed Mar. 13, 1940. No. 2,272,134.

Stabilized hydrocarbon — William H. James and Everett W. Fuller, Woodbury, N. J., assignor to Socony-Vacuum Oil Co. Filed Mar. 2, 1940. No. 2,271,940.

February 10, 1942

Process for thermal treatment of hydrocarbons—William O. Keeling, Pittsburgh, Pa. Filed June 18, 1937. No. 2,272,209.

Fractionation—Donald J. Bergman, Chicago, Ill., assignor to Universal Oil Products Co. Filed Apr. 24, 1940. No. 2,272,261.

Manufacture of polycyclic hydrocarbons — Aristid V. Grosse, Bronxville, N. Y., and William J. Mattox, Chicago, Ill., assignors to Universal Oil Products Co. Filed Mar. 30, 1940. No. 2,272,266.

Conversion of hydrocarbon oils—Charles H. Angell, Chicago, Ill., assignor to Universal Oil Products Co. Filed Feb. 25, 1938. No. 2,272,285.

Conversion of hydrocarbon oils—Clarence G. Gerhold, Chicago, Ill., assignor to Universal Oil Products Co. Filed July 14, 1939. No. 2,272,297.

Treatment of hydrocarbons—Percy Mather, Chicago, Ill., assignor to Universal Oil Products Co. Filed Sept. 16, 1938. No. 2,272,306.

Process of selectively refining petroleum oils—Arthur W. Hixson, Leonia, N. J., and Ralph Miller, New York, N. Y., assignors to Chemical Foundation, Inc. Filed Dec. 17, 1936. No. 2,272,372.

Refining of oil—Richard O. Bender, Ridley Park, Pa., assignor to Sinclair Refining Co. Filed Oct. 20, 1939, and July 24 and Dec. 9, 1940. Nos. 2,272,594, 2,272,595, and 2,272,596.

Beneficiation of low volatile hydrocarbons (lubricant)—Everette C. Hughes, Cleveland Heights, Ohio, assignor to Standard Oil Co. (Ohio) Filed June 28, 1940. No. 2,272,205.

Preparation of catalytic masses—Ivar H. Kinneberg and Jacob E. Ahlberg, Chicago, Ill., assignors to Universal Oil Products Co. Filed June 14, 1939. No. 2,272,301.

Stabilized high film strength lubricating oils—Bert H. Lincoln and Waldo L. Steiner, Ponca City, Okla., assignors to Continental Oil Co. Filed Feb. 19, 1936. No. 2,272,470.

Contacting device for high pressure absorption — George S. Bays, Tulsa, Okla., assignor to Stanolind Oil & Gas Co. Filed Apr. 30, 1940. No. 2,272,503.

Manufacturing asphalts—Robert E. Burk and Charles H. Whitacre, Cleveland, Ohio, assignors to Standard Oil Co. (Ohio) Filed July 15, 1938. No. 2,272,866.

Lubricant—Carl F. Prutton, Cleveland Heights, Ohio, assignor to Lubri-Zol Development Corp. Filed Dec. 12, 1938. No. 2,272,923.

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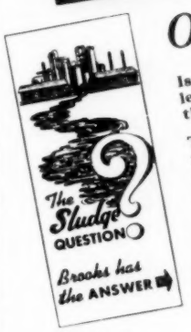

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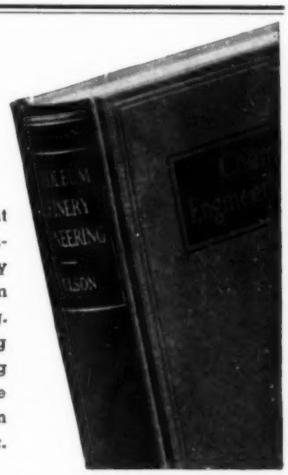

Here is a guidebook for plant managers, superintendents, chemists, engineers, and other refinery men—providing a complete, modern treatment of petroleum processing. It emphasizes the relation of refining to chemical engineering, covering fundamentals, many details of the design and operation of petroleum equipment, economical aspects, etc.

PETROLEUM REFINERY ENGINEERING

By W. L. Nelson, Consulting Petroleum and Chemical Engineer, Professor of Petroleum Refining, University of Tulsa. 2nd Edition, 715 pages, 6 x 9, 106 tables, 201 illustrations $6.00

This book provides a complete background of engineering theory in chapters on chemistry, laboratory evaluation methods, the physical properties of oil, and the unit operations of chemical engineering as applied to petroleum—as well as chapters that deal particularly with petroleum refining.

Illustrations or examples of almost all important calculations are included. The book builds up a few very important fundamentals and indicates how these may be used to work almost any type of plant problem, even those not directly associated with petroleum.

National Petroleum News
1213 W. Third St., Cleveland, Ohio

The Effect of Lower-Octane Gasoline On Operation and Maintenance of Cars

Difficulties arising in the operation of motor vehicles through a reduction in the octane number of regular-grade gasoline as a wartime necessity will be lessened if the drop could be held at around 72 at least until there has been time to find the best means for making the necessary mechanical adjustments in the field.

A drop to 65 in octane number of regular grade would introduce problems of major seriousness for passenger cars, trucks and buses, including that of supplying the necessary conversion parts. It would also result in a considerable increase in gasoline consumption.

These are conclusions in a report made to the Society of Automotive Engineers, by the gasoline subcommittee of the S.A.E. War Engineering Board. Members of the committee making the study of the effect of lower-octane gasoline on the design, operation and maintenance of motor vehicles included the following: J. B. Macauley, Jr., Chrysler Corp., chairman; Earl Bartholomew, Ethyl Gasoline Corp.; T. A. Boyd, General Motors Corp.; W. H. Graves, Packard Motor Car Co.; W. S. James, Studebaker Corp.; F. F. Kishline, Nash-Kelvinator Corp.; L. S. Sheldrick, Ford Motor Co.; R. H. Whistler, Hudson Motor Car Co.

The full report follows:

A CAREFUL study of the problems expected to follow a reduction in the octane number of regular-grade motor gasoline has led to the following conclusions:

1. That, for satisfactory operation without mechanical change, one-half of the passenger cars require gasolines better than 70-octane number, and one-fourth of them need even better than 75.

2. That a large proportion of trucks and buses in fleet operation are built for, or have since been converted for, and are now being operated on, gasolines of about 75-octane number.

3. That, by the changes required to fit engines to lower-octane gasolines, fuel economy would be reduced by an amount which, for a drop of only 5 octane numbers, would in trucks and buses amount to from 5 to 10%.

4. That, for trucks and buses, lowering octane number would result also in reduced acceleration, impaired hill-climbing ability, and generally slower—and therefore more costly—operation.

5. That any considerable lowering of octane number would introduce a problem in the supply of necessary conversion parts for passenger cars, trucks, and buses, and that maintenance costs would then be increased, particularly in trucks and buses.

6. That lowering octane number would greatly aggravate the difficulty of preignition, which in many automobile engines is a very troublesome problem, even with fuels of present octane number.

In view of these conclusions, which are based upon the more detailed discussion following, it is clear that any material reduction in the octane number of regular-grade motor gasoline below the current level would introduce difficulties in the operation of automobiles, trucks, and buses. The greater the reduction, the more serious these difficulties

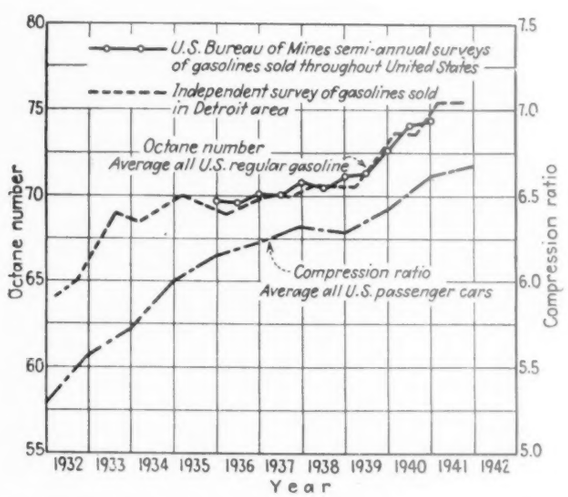

Fig. 1—Trends in octane number of regular-price gasoline, and in compression ratio of passenger-car engines over the past ten years

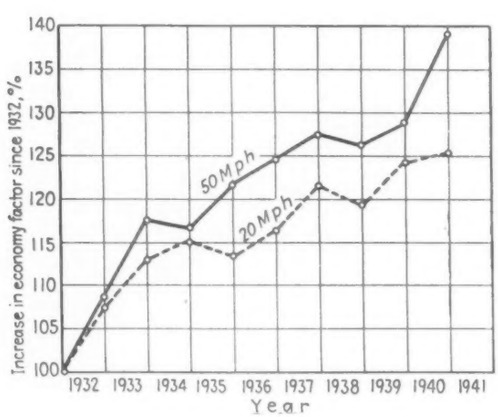

Fig. 2—Trend of economy factor expressed in ton-miles per gallon (average of 12 representative cars taken from all price groups)
Comparisons were made of constant road speed of 20 and 50 mph respectively, on level highways

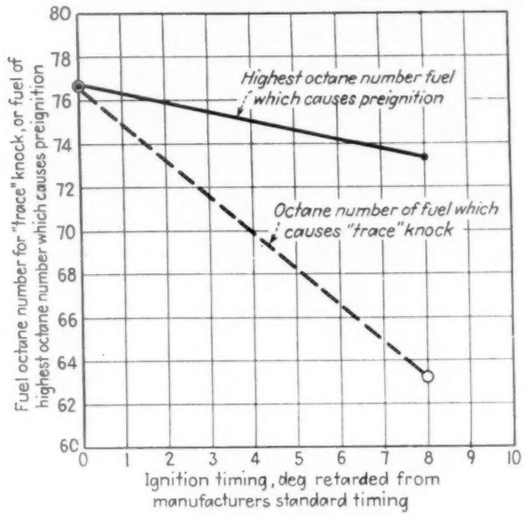

Fig. 3—Effect of retarding ignition timing from manufacturer's standard timing on octane-number requirements for "trace" knock and elimination of preignition
1941 standard production automobile. Preignition was detected by ear and manifested itself in the form of an excessively loud sharp crack of detonation easily discernible above normal knock, if present. All observations were made on blends of standard ASTM secondary reference fuels

would become. A drop down to 65-octane number would introduce problems of major seriousness, and would, at the same time, result in a considerable increase in gasoline consumption.

The difficulties arising from any reduction in the octane number of regular-grade gasoline that might have to be made would be lessened if the drop could be held to not less than 72, at least until there has been time to find the best means of making the necessary changes in the field in each instance. The problem of taking care of these vehicles built to operate on premium-grade gasoline would be especially difficult, unless a suitable distribution for civilian use of such gasoline of adequate octane number is continued.

Discussion

In the language of the automotive engineer it is axiomatic that compression ratio is an important factor in determining engine power and efficiency of fuel utilization, that is, fuel economy. Boosting compression ratio increases engine power and fuel economy, and reducing compression ratio lowers power and economy. It is also widely understood that the thing that determines what compression ratio is commercially feasible is either the knocking or the preigniting tendency of the fuel. And, generally speaking, the latter two qualities are indicated by octane number.

Changes in Engine Design Follow Evolution in Fuels—In recent years, the trend in compression ratio both in passenger-car and commercial-vehicle engines has followed the rise in octane number of commercially available fuels. This trend for passenger-car engines is shown in Fig. 1. During the same time there was a similar upward trend in the cases of bus and truck engines. During the past ten years, also, the octane number of the average regular-price gasoline, which represents in the neighborhood of 75% of the gasoline sold, has increased from 65 to 75.

Over the same period the average compression ratio of passenger-car engines has increased from 5.3 to 6.7:1.

During this period, the trend in fuel economy has been upward also, due partly to increased compression ratios and partly to other factors. This improvement is shown in Fig. 2, which represents an average of 12 representative cars, including all price groups. On the basis of ton-miles per gallon, the increase is there seen to have been of the order of 25 to 40%. The rise in fuel economy seen in Fig. 2 has been accomplished in spite of a consistent increase in car performance made over the same period. Comparing the curves in Figs. 1 and 2, the correspondence in the upward trends of octane number, compression ratio, and fuel economy is apparent.

It is thus apparent that there is a close relationship between engine design and fuel quality in respect to octane number. So much is this so, in fact, that it has often been said that the fuel is just as much a part of the engine as are the pistons, the cylinders or the crankshaft. Because the fuel is an integral part of the power-producing unit, maximum efficiency and satisfaction to the user demand that the fuel fit the engine just as the various mechanical parts must fit one another. In accordance with this principle, it has been the practice to design automobile engines to fit the average gasoline currently available and to take advantage of the improvements in octane number and volatility as they have occurred. Any sustained trend in fuel characteristics either upward or downward will therefore be followed by changes in engine design made either at the factory or in the field after the engines leave the factory.

Problems Encountered in Downward Revision of Octane Number—Although an engine designed to operate on a low-octane gasoline will operate satisfactorily on a fuel of higher octane number, other things being equal, the converse is not true. That is to say, an engine designed to operate on a gasoline of high octane number will not operate equally satisfactorily on one of materially lower octane number. The principal problems encountered in attempting to run with a gasoline of lower octane number than that for which the engine was originally designed, are the following:

1. Knock
2. Preignition
3. Loss in economy, i.e., miles per gallon
4. Loss in performance, i.e., power
5. Increased maintenance cost.

All of these factors are difficult to evaluate quantitatively for a number of reasons, which will appear from the discussion that follows. Nevertheless, it is believed that, in the event of a reduction in octane number, all of them would be felt by the consumer in varying degrees according to circumstances. And these problems get increasingly difficult as the amount of reduction in octane number becomes greater.

Knock—Engine knock is the first difficulty arising from a reduction in octane number. The amount of knock will vary in any given make of car according to the initial spark advance and distributor characteristics, the quantity of combustion-chamber deposit, the kind of driving, and other factors, such as the type of operation, the elevation, and the topography. The engines manufactured in recent years are the ones that would knock most. They are also the ones driven most, and therefore the largest users of gasoline.

The most extensive information available on the octane requirements of passenger cars in the years from 1939 to 1941—based on the surveys of the Cooperative Fuel Research Committee—indicate that approximately one-half of the cars require fuel above 70 octane number and one-quarter require fuel above 75 octane number. Some of the higher-priced cars are designed for premium-priced gasoline, of course, and a higher proportion of such cars would require fuels above 75 octane number, although comprehensive data on this point for cars in service are not available.

On this basis, with 75 octane number currently available in regular-priced gasoline, the present balance has been

reached at a point where approximately 25% of the cars may be expected to knock to some degree on the regular-grade gasolines available now. If the octane number of regular-grade gasoline were lowered, there would be increasing difficulties from knock that could be adjusted only by retarding the ignition setting, by lowering the compression ratio, by more frequent cleaning of the combustion chamber deposits—or, alternatively, by the purchase of premium-grade gasoline.

Preignition—Preignition is an important and troublesome factor that would become increasingly prevalent with a reduction in octane number. It is encountered in varying degrees in a considerable number of current automobiles with present 75-octane gasoline, and even to some extent with 80 to 81-octane gasoline. Preignition is more difficult to evaluate than knock, although it is certain that it becomes increasingly objectionable with a lowering of octane number. To the driver, preignition sounds like severe knock and, when violent enough, it leads to failure of pistons, piston rings, spark plugs, or cylinder-head gaskets.

Unlike knock, preignition cannot always be eliminated by spark adjustment. In illustration of this condition the chart, Fig. 3, is included. There it is seen that, although retarding the spark lowered considerably the octane requirement for trace knock, the octane number required for freedom from preignition was not greatly reduced. The most effective control of preignition is a lowering of compression ratio, which reduces miles per gallon, or the frequent removal of combustion-chamber deposits. Both of these means would be costly to the car user. In engines already built, lowering compression ratio requires, for best results, either new pistons or a new cylinder head. The simpler method, sometimes used, of substituting a thicker cylinder-head gasket or of using two standard gaskets has, in practice, been found too troublesome in some cases to make it a generally acceptable means of lowering compression ratio. The lowering of compression ratio in the field would therefore introduce a problem in the supply of new parts necessary and this problem would be aggravated by the present shortage of materials.

Fuel Economy—Fuel economy would be affected in the event of a downward adjustment in octane number as a result of the retarded spark settings or lowered compression ratios that would be required to avoid objectionable knock. Although in respect to passenger cars there is not a great deal of experience on this subject, the evidence indicates that, from the viewpoint of fuel economy, it is preferable wherever possible, in compensating for a reduction in octane number, to retard the spark rather than to lower the compression ratio. There is, of course, a limit to the amount of spark retardation that is practicable, and it is believed that some of the passenger cars designed for present gasolines could not be adapted successfully to fuels below 70 octane number by ignition adjustment alone.

In the case of trucks and buses, where losses in full-throttle efficiency count more heavily in overall gasoline consumption than in the case of the passenger car, it is estimated from experience that an increase in fuel consumption of from 5 to 10% would accompany a reduction of 5 octane numbers, from 75 to 70, in antiknock value of the fuel. Even 1% of present motor-fuel consumption is 250,000,000 gal. per year. Thus, in the interest of conservation of available gasoline, it appears desirable to keep the octane level of civilian motor fuel just as high as possible.

Engine Performance—Because of the fact that both knock and preignition are phenomena that occur usually at wide-open throttle, the measures taken to combat them, such as retarding the spark and lowering the compression ratio, have an important effect on engine performance at full-throttle operation. From the standpoint of war-time economy, some performance could, if necessary, be sacrificed in passenger-car operation. In commercial transportation, however, performance has greater significance, for it affects not only miles per gallon but other factors also. Present transportation facilities are being heavily burdened with increased traffic due to the defense activity. In bus and truck operations in particular, a reduction in performance would result in slower acceleration, impaired hill-climbing ability, slower schedules, and consequently in a need for additional vehicles and personnel to handle present traffic.

Maintenance—The problem of engine maintenance, for passenger cars as well as for trucks and buses, would be greatly complicated by a reduction in octane number. This added maintenance work would include the following:

1. Replacement of parts and adjustment of ignition timing.
2. Replacement of parts due to mechanical failure.
3. Frequent removal of combustion-chamber deposits.

Truck and bus operators particularly would be faced with the necessity of replacing present cylinder heads, or pistons, in order to adjust compression ratios to accommodate the lower octane numbers. At the same time, in a good many cases, it would be necessary to change spark plugs, carburetor jets, and distributors. The present shortage of materials, particularly of aluminum for pistons, would make this program difficult.

Any who might try to get along without making the required service changes would run the risk of mechanical failure of pistons, piston rings, spark plugs, and cylinder-head gaskets due to excessive knock or preignition. Such failures would involve not only the cost of replacing broken parts but also the still larger expense resulting from loss of time and efficiency due to the interruption of service.

For those who might be able to solve the problem through adjustment of ignition timing and more frequent removal of engine deposits, the lowering of octane number would present less of a problem from the materials standpoint, but they too would bear an added cost in the form of increased labor and interrupted service.

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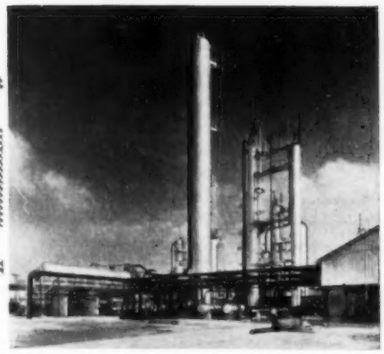
REFINING NEWS



Two Gulf Refineries Close As Transportation Tightens

Special to NPN

HOUSTON, Mar. 2 — Lack of adequate transportation facilities to move oil from the Gulf Coast to the East Coast has caused the shutdown of two independent refineries on the Texas Gulf Coast, other independents face shutdowns and four of them were due to announce reductions in crude purchases this week.

Shut down were the Bareco and the Terminal Oil & Refining Co. plants at Corpus Christi. Due to announce reductions in crude takings were Amsco, M.A.R. Pipe Line, Republic, and Southern Minerals.

Gulf Coast Refiners Assn., with 13 independent members, reported stocks of gasoline as of Feb. 15 totaling 2,237,656 bbls., an increase of 309,111 bbls. over stocks of Feb. 1. According to the American Petroleum Institute, stocks of finished and unfinished gasoline on the Texas Gulf Coast, both major and independent, increased a million barrels to 19,914,000 during the week ended Feb. 21.

Magnolia Cuts Takings

Meanwhile, Magnolia Pipe Line Co. announced that, effective as of March 1, it will cut its crude takings to 60% of the allowable of wells to which it is connected in West Texas and New Mexico. Atlantic, Humble and Texaco previously reduced crude purchases in these areas.

One of the leading independent refiners quoted Platt's *Oilgram* to substantiate his contention that one of the chief effects of the transportation shortage has been a softening of the market for refined products.

"This is cause for greater alarm to independents than may be evident on the surface," he said. "If within several weeks, or months, adequate transportation facilities become available, the low prices of the present spot market may continue. The oil industry, under the war regulations, is so closely regulated in marketing that no longer does the law of supply and demand regulate price. Therefore, the lower prices for refined products may continue after demand, through increased transportation facilities, increases.

Sees Refiners Hit

"Also, we must consider this: Deputy Co-ordinator Ralph K. Davies last week told the Cole committee that OPC soon will ask OPA for higher prices for crude and refined products. The increase in refined products may be made on the basis of prevailing prices, which are abnormally low, while the crude increase will be made on the basis of frozen posted prices, thus working a damaging proportion out on refiners, particularly the independents. Crude is not selling below posted prices. Instead, purchasers are reducing their takes."

This same executive charged that the Texas Railroad Commission added to the confusion by not cutting allowables to conform with purchasers' takings in the areas affected by the reductions, which were started before the last commission order was issued. He said he fears the market will be flooded with "distress" oil.

TULSA, Feb. 28.—Lone Star Gasoline Co. announces installation of additional Perco copper sweetening units at Ranger and Eastland, Tex., gasoline plants. These plants have a nominal capacity of 40,000 GPD.

Isomerization Program Still Needed Despite 3-Way Refining Unit Plans

NPN News Bureau

WASHINGTON, Mar. 2. — Program for 3-way refining units, sponsored by Office of Petroleum Co-ordinator to produce 100-octane, butadiene and toluene, will not lessen the need for large-scale construction of isomerization plants, an OPC refining official told NPN today.

Isomerization plants are being pushed as a means of supplying immediate needs for raw materials for the 100-octane program. By isomerization, normal butane from natural gasoline is converted into iso-butane which in turn is fed to alkylation plants to make alkylate (blending agent for 100-octane).

The 3-way refining units will produce their own iso-butanes and iso-pentanes. But it will probably be many months before they can be completed. Meanwhile, there are a number of plants which can produce 100-octane blending agents from iso-butanes, so that isomerization plants will be needed to convert normal butanes.

Principal advantages of the 3-way refining units is that they provide for maximum yield of 100-octane and toluene. And that is the OPC's objective now, even though in this instance it is a somewhat longer range prospect.

Either of Two Processes Used

Two types of processes can be used in the 3-way refining units. One is the stationary bed catalytic cracking method and the other the fluid catalyst method.

While yields depend on construction of each plant, process and charging stock, it is understood that one report showed a yield of 10% to 30% of 100-octane, about 6% of butadiene and about 2% of toluene.

A typical 3-way unit will include an alkylation plant and a dehydrogenation unit; the latter to obtain butadiene. Toluene will be separated by either the solvent or azeotropic method. Principal by-product will be a high-grade distillate fuel. Ethylene, needed for many wartime materials, is another by-product.

Minimum size will probably be around 20,000 bbls. daily.

Lower Octane Ratings Expected by Refiners

CLEVELAND, Mar. 2 — Some refiners believe that trend in octane ratings will be given another push downward—at least for motor fuels available to the general public.

Military requirements for tetraethyl lead are growing rapidly. U. S. Army is insisting that suppliers deliver 80-octane (ASTM) minimum on Treasury Procurement Division's contracts for V-80 gasolines for all federal agencies (so that the Army can have 80-octane available at bulk plants all over the country). And this is expected to cut into "lead" available for general civilian use.

First move would probably be to lower the 78-octane (ASTM) minimum for Ethyl gasolines, followed by a drop in "regular" grade—perhaps to 68 (ASTM) in some districts.

British-U. S. Agree on 1 Grade For 100-Octane Gasoline

WASHINGTON, Mar. 2.— All 100-octane gasoline sold after March 1, either for domestic or foreign use, (most of the latter under U. S. Lend-Lease arrangements), must meet Army and Navy specification AN-VV-F-781, amendment No. 4, a reliable source told NPN this past week. This permits use of 4 cc of lead to be added for every U. S. gallon of 100-octane.

Meanwhile, NPN learned from D. V. Glass, chief statistical officer of British Petroleum Mission, that "as a result of recent discussions we have revised our specifications for 100-octane and for 87 and 91-octane unleaded aviation base and special refinery gas oil, as well as for a number of pool fuel specifications."

Additional changes in British "specs" for 100-octane are anticipated, a BPM spokesman said, but added he was not at liberty to discuss them at present.

W. W. Scheumann . . . named general superintendent of oil refining by Cities Service. He has presented many papers before refining technical groups

Manages Refineries For Cities Service

Special to NPN

BARTLESVILLE, Okla., Mar. 2.—Effective March 1, W. W. Scheumann, chief chemist for Cities Service Oil Co. here, will become general superintendent of oil refining. He will supervise refinery operations at Okmulgee and Ponca City, Okla., and East Chicago, Ind., plants.

Mr. Scheumann is well known in refining circles in the Southwest and is remembered for his paper entitled, "Octane Numbers—The Refiners' Will o' The Wisp." He is a member of District 2 subcommittee on aviation gasoline, member of American Chemical Society, American Petroleum Institute, American Society for Testing Materials and Society of Automotive Engineers. He has been with Cities Service since 1924 and chief chemist for refining division since 1937.

Post Initial Crude Prices For New Louisiana Horizon

Special to NPN

SHREVEPORT, La., Feb. 28.—Arkansas Fuel Oil Co. has announced initial posting for crude produced from Pettit Lime horizon of the old Haynesville field in Claiborne Parish, La. This is said to be a deeper producing formation than formerly produced in this field.

New posting effective Feb. 18, starts with below 25 gravity at 88c per bbl. with 2c differential per degree gravity to 40 and above at $1.20.

"Prices quoted are to apply strictly on natural crude oil production and in no case are to apply to any mixture of crude oil," announcement said.

Texas Oil Industry Scrap Campaign Already Collects Thousands of Tons

Special to NPN

DALLAS, Feb. 28. — The Texas petroleum industry was "getting in the scrap" this week as oil and gas operators in 100 leading producing counties started bringing in their scrap metals and rubber.

The collection campaign, sponsored by the Texas Mid-Continent Oil & Gas Assn. at the request of the War Production Board, has already resulted in collection of thousands of tons of scrap, Charles F. Roeser of Fort Worth, general chairman, reports. More is expected to come in during the first few weeks in March to swell the total to huge proportions.

"The results thus far have been so gratifying that we are expanding the drive into a continuous program of scrap collection," Mr. Roeser said. "With our county organizations set up and functioning efficiently, and with our operators now thoroughly familiar with the procedure of collecting and selling their scrap, we will keep on with this for the duration of the emergency.

'Keep Scrap Moving'

"I am appealing to the operators to keep their field superintendents and farm bosses on the job, so hereafter when a truckload of scrap accumulates, they will move it in to their scrap-dealer and see that he ships it out with other scrap to mills needing it. Thus the oil and gas industry will be able to keep a continuous stream of scrap moving back to the mills."

Only incomplete reports have been received so far from county chairmen as to the amounts they have collected, Mr. Roeser said. However, Big Spring reported 10 cars loaded out in that area alone, while several West Central Texas centers together had 17 car-loads. A preliminary total on the Panhandle showed around 2000 tons moved from Borger, while an early East Texas field estimate gave this area about 37 carloads so far. However, all figures are preliminary and it may be several weeks before an accurate total can be arrived at.

Collect Scrap to Slap the Jap

Everything from old pumps to an oil scout's car have been collected in the Texas Mid-Continent Oil and Gas Assn.'s scrap collection drive for the Texas petroleum industry. Here is Scott W. Myers, Unity Oil Co., Beaumont, chairman for Jefferson and Hardin counties, viewing some of the scrap already collected there while a car is being loaded (left) to move to eastern mills

Lube Additive Problems Still Pondered by OPC

NPN News Bureau

WASHINGTON, Feb. 28.—Office of Petroleum Co-ordinator today reportedly was still working on a recommendation to curtail use of chemicals in additives, which may prohibit use of creosol in additives for lubricating oils and reduce the use of pour point depressants.

Informed sources said the saving sought by OPC will not increase wear on moving parts of cars nor materially alter quality of finished lubes. The proposed recommendation, it was understood, is expected to curtail use of toluene, naphthalene and higher alcohols.

Mississippi Delays Conservation Bill Requested by OPC

Special to NPN

JACKSON, Miss., Mar. 2—Office of Petroleum Co-ordinator's hopes for an oil conservation bill in Mississippi look bleak now, NPN was told by telephone, when Mississippi Senate Feb. 27, by a vote of 24 to 21, passed a motion to indefinitely postpone action on Conservation Committee's substitute for Senate Bill No. 93.

Sen. B. H. Loving, chairman of committee, said Bill 93 had been written at the request of government officials after conservation committees of House and Senate held a joint session to hear government officials urge the necessity of a conservation law for the state. Committee's substitute bill had been reported out of committee "do pass."

Provisions of Bill

Briefly, substitute bill, said to be patterned after Arkansas' "model statute", provided for a 5-man board appointed by the governor. At least 2 members would be required to have had 5 years experience in transportation, production and conservation of petroleum, and no employe could be in any way affiliated with the industry after being employed by the board.

No further action has been taken by the House on bills now referred to Conservation Committee, it is said. (*NPN Feb. 25, p. 16*).

PRODUCTION NEWS...

Etex Program On Salt Water Pushed Ahead

Special to NPN

AUSTIN, March 2 — The Texas Railroad Commission's salt water reinjection plan for East Texas went into effect, in part, on March 1 after the commission moved the date up a month.

Seeking to stop the pressure drop in the huge field, the commission, following recommendations of Petroleum Co-ordinator Ickes, had made the reinjection plan applicable April 1. It has been decided, however, to move part of the order up to March 1.

The March 1 order applies only to wells making over 100 bbls. of salt water daily. The commission estimated that there are 1292 such wells in the field, and they produce 82% of all the water produced in the field.

All other wells will go on the bonus schedule April 1.

Under terms of the plan announced last week (*NPN Feb. 25, p. 16-c*), wells producing over 100 bbls. of salt water may shut down, and the commission has agreed to assign that allowable to good wells.

Commissioners doubted that they could enforce the order legally, since the law gives a man the right to produce the oil under his property regardless of how much water he produces along with it. In other words, the legislature has not authorized the proration of water.

Since Office of Petroleum Coordinator is interested, however, it is believed the federal government would step in with a war-powers ruling if the bonus plan were ever knocked out in court.

Plan May Spread

In the meantime, commission engineers are watching closely for the results of the plan in the East Texas field. If the pressure is restored—as they think it will be—the plan may be spread to other water-drive fields in the state.

They expect the co-operation of oil producers, generally, since pressure loss means pumping and this is an expensive proposition even in peacetime. During the war, with the accompanying scarcity of pumps and machinery, many wells would have to close down entirely if they ceased to flow by pressure.

Mississippi's Crude Tax Hike Bill Passes Senate; House Still to Act

Special to NPN

JACKSON, Miss., Mar. 2. — Mississippi Gov. Paul E. Johnson's fight to increase state's tax on crude oil from its "nominal" 2% "sales tax" rate to "not one cent less than 5c a barrel on the cheap quality of oil and at least 10c a barrel on the better quality", or 2-5% increase which he asked in his biennial message to legislature Jan. 7, has moved up a notch, NPN was told in a telephone call to Jackson.

The Senate, late Feb. 24, passed Finance Committee's compromise bill levying flat 4% tax. However, compromise measure escaped by a narrow vote being amended from the floor to provide a 3% tax.

Original Bill Asked 7.5%

Original Senate bill was for a 7.5% tax.

Next hurdle in the fight is to bring out of House Ways and Means Committee Rep. Earl Denham's bill also calling for 4% tax. Committee has held one public hearing on the bill, but no further action has been taken. If committee reports favorably on bill, opponents point out next possible move would be to request amendment making tax in lieu of all other taxes, such as ad valorem on equipment.

Fuel Oil Plant Completed In Canadian Field

Special to NPN

TORONTO, Mar. 2.—Franco Oils, Ltd. has completed a 2000-bbl. capacity plant for conditioning crude to use as oil at Borrodaile, Alberta, adjoining the Vermilion oil field. First shipments have been made to the Canadian National Railways which are using it as locomotive fuel. An order for 350,000 bbls. from the railway was obtained by the company's subsidiary, Vermilion Consolidated Oils, Ltd., through the office of the Dominion Fuel Controller.

Knowlton Explains M-68; Outlines Crude Demands

NPN News Bureau

WASHINGTON, Feb. 27—"It has been estimated that upon completion of the presently contemplated plants for production of the special products of petroleum, at least 3,600,000 bbls. of crude oil per day will be required to produce the necessary volume of military products."

This is a statement made today by Office of Petroleum Co-ordinator's Production Director Donald R. Knowlton in a speech on "The Responsibility of the Oil Industry in the War". It was given before the American Petroleum Institute's production division in Dallas, Tex., and released by OPC here.

Required refinery runs may exceed the present 4,100,000 bbls. daily, Mr. Knowlton told the production meeting.

Explains Need for M-68

Explaining the need for Conservation Order M-68, OPC's production director said:

"We know and have convinced the WPB (War Production Board), that a complete moratorium on drilling would make it impossible for the industry to fulfill its assignment. However, we realize and I am sure that you also realize that the industry must accomplish its task and at the same time consume far less material than it has in previous years. Operators should realize that when a single casting is lowered into the ground to be cemented in the average well, over 60 tons of steel are used. This amount is equivalent to 2 large fighting tanks.

"All operators should scrutinize each well to see that the well is necessary and that the materials are being put to the most advantageous use. Drilling of 2 wells where one would suffice is tantamount to performing sabotage and blasting off the battlefields 2 large tanks. Even though the intent is not the same, the result is identical as far as the expenditure of scarce materials is concerned.

Steel Consumption Large

"The production end of the business uses almost 50% of the steel of the entire industry and naturally the WPB looks longingly at the millions of tons of steel buried in the earth annually in this phase of the business—much of it never to be salvaged.

"For the year 1942, we estimate that it will be necessary to restrict the use of materials to about 60 per cent of the quantity which the industry consumed in 1941. Last year we drilled 31,733 wells; this year we must limit drilling to approximately 19,000 total wells. Deducting dry holes we drilled 23,000 oil and gas wells in 1941, and it is estimated that we will need 13,000 productive wells in 1942 to maintain developed reserves at a proper level to supply likely crude oil requirements.

Drilling To Drop 40%

"Although drilling and the use of critical materials must be reduced by at least 40%, discoveries and development of new reserves must at least equal consumption. Inasmuch as each new discovery reduces the number of pools remaining to be discovered in the future, the chances for finding new pools are steadily diminishing. It is very significant that production in 1941 was over 3 times the quantity of reserves added by the new pools discovered, although the industry drilled the greatest number of wildcat wells in the history of the business. Furthermore, the average of the new discoveries is diminishing at an alarming rate. This year the industry should drill at least 4000 wildcat wells, preferably 5000 as compared to the 3100 drilled last year. The limited number of wells which will be drilled to develop known fields and new discoveries must be so judiciously placed as to accomplish the

(Continued on Next Page)

Gives M-68 Background

Donald R. Knowlton

development of the maximum quantity of reserves. This simply means that unnecessary close spacing of wells must be avoided."

Issuance of M-68 was referred to as "a pioneer step" by Mr. Knowlton who explained that WPB's intentions are to limit "the use of material to the drilling of wells which are truly exploratory and to the drilling of wells which will develop the maximum quantity of reserves." He added: "The soundness of this program under the present circumstances cannot be questioned."

Aim to Speed Exceptions

Mr. Knowlton spoke of the pressure under which OPC and other government agencies were continually working and that "the Co-ordinator's office has so far not been sufficiently staffed to permit handling of the applications for exceptions as expeditiously as we should like. The avalanche of applications are being carefully analyzed and all but the very latest submitted are in some stage of completion. We are obtaining more space, gradually getting the facilities and personnel necessary to get our organization functioning smoothly. Our aim is to be so organized as to be able to process every application filed under Order M-68 within 48 hours of the time it reaches our office."

To conserve critical materials, Mr. Knowlton said: "It should be definitely understood by the industry that exceptions to M-68 must necessarily be few and far between." He added that it is unfortunate during the war that "we cannot fully protect the equities of every operator."

State regulatory bodies must take care of the equities as far as possible, the production director said, explaining that producers in states having conservation laws have asked for practically no exceptions to M-68. He urged states not so regulated by conservation laws to "formulate them as promptly as possible." States having inadequate or poorly administered conservation laws "will suffer most under the necessary restrictive orders."

Deplores Erroneous Estimates

The speaker said it was his belief that "competition for allowables among fields under the various proration systems has caused the development of inflated and erroneous estimates of the sustained ability of wells and fields to produce." Prior to this, Mr. Knowlton said that production of fields at their present rate could not be continued for any sustained period of time.

Discussing possibilities of rationing petroleum products for civilian uses, Mr. Knowlton said:

"There has been much discussion of proposed limitations on civilian use of petroleum products. This is not such a simple proposition as it first appears. It is very difficult to differentiate between civilian uses and industrial uses, and particularly between essential and non-essential uses. Since the use of automobiles has become available to all classes of people, street car lines in many industrial areas have been torn out of the streets. Factory workers are able to dwell in homes farther removed from their places of work. The extent to which the restriction of civilian use of gasoline would hamper important industrial operations generally cannot be estimated, but it is certain that the effect would be serious if drastic limitations become necessary.

"An equally important reason why limiting civilian use is a step that needs careful consideration is the fact that we must refine crude oil at substantial rates in order to make necessary quantities of 100-octane aviation gasoline, fuel oils needed for the industrial operations, toluene for explosives, lubricants for our military operations, and the base stocks from which synthetic rubber is made. We now have the anomalous situation that ordinary motor fuel for automotive vehicles has become the by-product of the refinery as fas as importance of products is concerned. If, as has been suggested, the rubber shortage brings about a decrease in the amount of automobile motor fuel consumed, we may soon be faced with the necessity of storing above ground or even returning to the reservoirs large quantities of gasoline which will be produced with the necessary quantities of the military products of petroleum."

California Well Hit by Jap Sub's Shell

Photo shows pumping unit of Barnsdall Oil Co. well which was damaged by Japanese attack on California Coast Feb. 22. Damage was estimated at $500. Experts say shell was of high explosive type and ricocheted into the well. Only other damage done by the shelling was to break a small pipeline leading from a large storage tank

District 5 Surveys Heavy Oils To Seek M-68 Exceptions

NPN News Bureau

LOS ANGELES, Feb. 28.—A study of the heavy oil situation is being undertaken in District 5 in order to formulate a policy for exceptions to Conservation Order M-68.

California operators have contended that 40-acre spacing was too restrictive for operations in this state. They say that many of the fields here are comparatively small from the point of surface acres but have very rich and thick sands.

Operators are hopeful that after the study is completed exceptions to M-68 or 40-acre spacing will be given at least to new heavy oil fields.

Colorado, Wyoming To Present Cases For Higher Quotas

Special to NPN

DENVER, March 1.—Colorado's arguments for higher crude quotas will be taken to Washington March 6 by Warwick M. Downing, chairman of the Colorado Gas Conservation Commission.

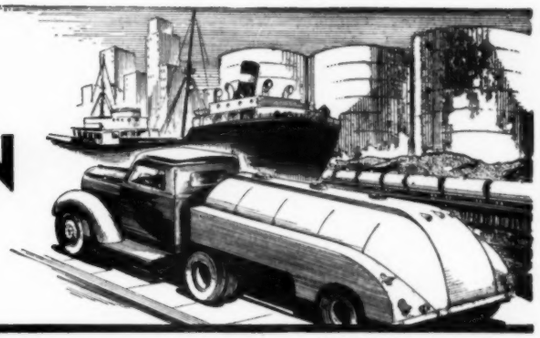
At the same time, Wyoming, whose recommended quotas have not been as high as the state claimed advisable, will send Warren D. Shelton of Casper. These two men, in addition to a group of producers headed by R. S. Shannon of Denver, chairman of District 4 production committee, will meet with Office of Petroleum Co-ordinator's production division that date.

Go To Washington

Figures showing Colorado's reserves have been prepared by Professors F. M. Van Tuyl and Clark Barb, petroleum experts of the State School of Mines. These will be presented by Mr. Downing along with production figures assembled by W. Roy MacGinnis, secretary of the Colorado commission, who is also state oil inspector. Similar data is being compiled for Wyoming by Mr. Shelton and for Montana by R. P. Jackson, secretary of the Montana Oil Conservation Board.

District 4 production committee has appointed an engineering subcommittee, headed by T. S. Harrison, geologist and petroleum engineer, assisted by Charles Lavington, A. E. Brainerd, John Blixt, Walter Nelson and H. E. Christensen, geologists and petroleum engineers connected with various companies producing in the states involved, to compile corresponding data showing stripper production separate from other classifications and a break-down of reserves by types of oil.

OIL TRANSPORTATION



ODT-WPB to Start Rationing Trucks, Trailers on March 9

NPN News Bureau

WASHINGTON, March 2.—"Thawing" of all types of light, medium and heavy trucks, truck-tractors and trailers, which have been "frozen" since first of this year, starts March 9 with a rationing program which War Production Board's director of industry operations, J. S. Knowlson, announced Feb. 28.

This commercial vehicle rationing program will be administered jointly by WPB and Office of Defense Transportation. Office of Price Administration will have nothing to do with it, although OPA handles rationing of passenger cars. Provisions of the plan are embodied in General Conservation Order M-100 and Schedule A to this order.

Earlier, manufacturers of truck tanks and chassis and trailers used for hauling petroleum products, were permitted to release all tank vehicles frozen under Order L-1-c. This authorization was sent to a comprehensive list of manufacturers of tanks and vehicles by Mr. Knowlson on Feb. 17 (*NPN Feb. 25, p. 143.*) Meantime, WPB announces extension of the ban on sales and deliveries of 1942 model light, medium and heavy trucks and truck trailers from Feb. 28 to March 8.

Trucks Classified

Under the commercial vehicle rationing plan, all vehicles are classified according to their predominant or principal use into 5 classes arranged in the order in which preference is to be granted. (Predominant use, WPB explains, means 30% or more of the applicant's operations).

Only specific mention of oil industry trucks in the classifications was as follows:

In Class 2, vehicles principally used directly in connection with the war effort, "such as in service operations connected with the construction, maintenance and supply of essential rail, highway, water, pipeline, and air transportation facilities"; and

In Class 3, vehicles principally used in connection with essential functions indirectly connected with the war effort, "such as for the transportation of ice, and fuel for heating and power to the ultimate consumer for personal, family or household use."

ODT said direct application to transport and tank trucks would probably be defined in individual interpretations.

Application forms and necessary instructions to applicants will be made available at all truck and trailer sales agencies, WPB says, adding that these forms will furnish data upon which WPB and ODT will determine whether an applicant is entitled to purchase a desired vehicle.

Applicants outside the exempted categories (Army, Navy, Marine Corps, Maritime Commission, Lend-Lease and certain other designated war operations), must send their purchase applications to one of the 84 local allocation offices of ODT.

WPB Has Final Say

Upon approval of a local allocation board officer, the application is sent to ODT headquarters in Washington. If approved there, it will be forwarded to WPB for review and action.

WPB approval, in the form of a "Certificate of Transfer," issued by WPB's director of industry operations, will enable the applicant to buy the vehicle wanted from any dealer in the U. S.

No preference rating heretofore or hereafter assigned shall entitle any person to receive any new commercial vehicle, WPB says.

Local appeal boards are to be established by ODT.

For a period of 2 years, all affected by this order will be required to keep "accurate and complete records concerning inventories and transfers of new commercial motor vehicles" and to make them available when wanted by authorized representatives of WPB and ODT.

Violators of this order are subject to criminal prosecution under Section 35 (A) of the Criminal Code. Moreover, violations, which include furnishing any misinformation to WPB and ODT, may result in violators being denied right to get any material subject to allocation for duration of the war.

WPB states that preliminary estimates indicate that about 196,000 trucks and trailers will be available for rationing during next 22 months.

While WPB established March production quotas for medium and heavy trucks, these may be cancelled due to rubber shortage and effort to hasten conversion of automotive industry to war work.

Tires Must be Secured From Local Boards

NPN News Bureau

WASHINGTON, Mar. 2.—The only way for any civilian vehicle to get tires or tubes is to apply to a local rationing board, Price Administrator Henderson says. This rule applies to truckers even though they may hold contracts with one of the military branches. Mr. Henderson's statement was made to clear up misunderstandings of some truckers who believe War Production Board can help them obtain tires and tubes if they hold contracts with some military branch.

California Refiners Ship By Tank Car, But Freight Cost Eats Up Sales Price

NPN News Bureau

LOS ANGELES, Feb. 28.—Long trains of tankcars moved out of California during past week heading for the northwest states. The trains were the first substantial shipments of petroleum products overland from California in many years and marked the beginning of what the Transportation Committee of District 5 hopes will be an increasing flow of tankcars into the Northwest.

During past week 7 trains of tank cars, varying from 48 to 53 cars per train, left San Francisco. One 50-car train left Los Angeles. The trains were made up by Richfield, Standard of Calif., Shell, Tidewater Associated, Texas, Union of Calif., and General Petroleum. Each company contributed whatever number of tank cars they could find and load. Thus far, in the plan, about 300 cars have been put to use and more trains are being put together as the cars can be obtained.

According to the railroad it believes about 10 trainloads of 50 cars each or 150,000 bbls. per day could be hauled in an emergency. However, to date the average haul has been less than one trainload per day.

One big drawback to large scale tank car hauling is the price situation. For example, the tank car rate to haul fuel oil from San Francisco to Portland, Oreg., is $1.50 per bbl. To haul gasoline on the same run is $2.10 per bbl. The freight rate from Los Angeles to Portland for fuel oil is $1.72 per bbl.

The posted price for petroleum products in Portland varies from $1.05 for fuel oil to $1.70 for diesel fuel. When the product does not even bring the freight charges it is obvious that some adjustment must be made if large scale shipments are to continue.

Tanker 'Tightness' Hikes 'Gas' Stocks, Gulf Refiners Say

Special to NPN

HOUSTON, Mar. 2 — Gulf Coast Refiners Assn. in its report of inventory position and crude oil processed the first half of February indicated total gasoline stock position of 2,237,656 bbls. as of Feb. 15, an increase of 309,111 bbls. since Feb. 1. "This increase reflects the seriousness of the current tightness in tanker transportation," report said.

Of total gasoline stocks reported, 260,935 bbls. were aviation gasoline, up 51,179; 1,773,006 bbls. motor gasoline, up 178,762 and 203,695 bbls. naphtha, up 79,140.

The 13 member-refiners ran 120,069 bbls. crude to stills daily or at the rate of 73.4% of rated capacity of 163,500 bbls. daily. Last half of January rate was 72.2%.

Kerosine stocks Feb. 15 totaled 152,632 bbls., an increase of 32,539 bbls.; diesel gas oil 554,996 bbls., up 59,755; diesel fuel oil 37,853 bbls., a decrease of 690 bbls.; all other types of gas oils 1,306,205 bbls., down 31,673; No. 5 fuel oil 443,282 bbls., up 27,029 and bunker "C" fuel 666,743 bbls., up 22,077.

Cutback asphalt stocks were reported at 49,876 bbls.

Turnpike Opened To Oil Truckers

NPN News Bureau

WASHINGTON, Mar. 2. — Opening of the high-speed Pennsylvania Turnpike to the movement of gasoline and other petroleum products drew commendation last week from Petroleum Co-ordinator Ickes.

Mr. Ickes disclosed that Chairman Walter A. Jones of the Pennsylvania Turnpike Commission, with Gov. James' support and approval, had voted to relax restrictions so that petroleum products could move through the super highway's tunnels. Chairman Jones notified Co-ordinator Ickes of this action by letter, and said in part:

"Realizing the grim situation which may develop in the necessary oil supplies along our Eastern Coast due to the destruction by our enemies of so many tankers, I have today requested the Turnpike Commission to relax its policy heretofore adhered to as to the movement of tank trucks through our tunnels in the Allegheny Mountains.

"At my urgent request the Commission has decided to open the Turnpike to the transportation of petroleum products, including gasoline, subject to very necessary police regulations for handling traffic of this kind."

Tank Cars to East Break All Records

NPN News Bureau

WASHINGTON, Mar. 2—For the first time in history, daily tank car movement of crude and products into the East Coast area passed the 300,000-bbl. mark, and totaled 326,636 bbls. for week ending Feb. 21, Office of Petroleum Co-ordinator announces.

Participating oil companies loaded 10,162 cars to establish the new record, compared with a loading of 7987 cars the previous week, OPC said.

Companies reporting tank car movements for the week ending Feb. 21 were:

Atlantic—476; Cities Service—337; Continental—36; Gulf—800; Pan American—1168; Pure—110; Shell—866; Sinclair—595; Socony-Vacuum — 1178; Kentucky Standard — 71; Jersey Standard—2559; Sun—561; Texaco—1202; Tide Water—203.

Number of Cars by Products

	Feb. 21	Feb. 14	Difference
Crude	5657	4698	+959
Gasoline	2307	1755	+552
Kerosine	313	237	+ 76
Fuel oil	1351	989	+362
Lubricating oil	120	63	+ 57
Asphalt	33	30	+ 3
Naphtha	31	14	+ 17
Residual	310	122	+ 88
Liquefied Petroleum gases	13	9	+ 4
Wax	6	3	+ 3
Miscellaneous	21	42	— 21

LOS ANGELES — For the duration of the emergency the Railroad Commission of California has ordered that the Southern Pacific Railroad may reduce its rates for the transportation of casinghead gasoline from Chrisman to Avon to 28c per 100 pounds from 41c per 100 pounds and for the run from Chrisman to Watson to 8c per hundred from 13c per hundred.

In the past, Tidewater Associated Oil Co. has been operating tankers in this area.

March Tire Quotas Exceed Last Month

NPN News Bureau

WASHINGTON, Mar. 2. — No retreading or recapping of passenger car tires will be permitted nor will renewed passenger car tires be sold in March, but for persons eligible to buy them more new tires will be available this month than during February, Office of Price Administration announces.

March quotas provide for a total of 104,701 new tires and 87,635 new tubes for List A vehicles, compared with 80,784 tires and 67,616 tubes for February. March quotas of new tires for List A trucks, buses, farm equipment and other heavy vehicles total 256,385 tires and 288,149 tubes.

Retreaded and recapped tires for rationing to eligible (List A) trucks, buses, farm equipment and other heavy vehicles total 110,225 in March. No comparison of this quota with February can be made, as rationing of retreads for heavy vehicles did not begin until Feb. 19.

Sales of renewed tires to truck users in List B will be permitted beginning March 25—if requirements of List A eligibles have been satisfied.

OPC Urges Hauling More Fuel To East

NPN News Bureau

WASHINGTON, March 2.—A second urgent appeal for immediate action to increase East Coast fuel oil supplies was made last week by Deputy Petroleum Co-ordinator Davies. First appeal was made Feb. 7 (*NPN Feb.* 11, *p.* 5).

In wires to 15 eastern marketers, Mr. Davies asked (1) transfer to domestic heating oil service of all suitable tankers now hauling gasoline from the Gulf Coast and (2) increased tank car movements of domestic heating oils.

He offered to help the companies in getting tank cars for use in hauling heating oils into the eastern area and asked that they "telegraph number of cars needed".

Companies receiving Mr. Davies' wire were: Kentucky Standard, Atlantic, Cities Service, Consolidated, Continental, Gulf, Pure, Texaco, Tide Water, Pan American, Shell, Socony-Vacuum, New Jersey Standard, Sun, and Hartel Products Corp.

To 'Tighten' Demurrage Rules

NPN News Bureau

WASHINGTON, Feb. 27.—National Industrial Traffic League has tentatively approved several miscellaneous changes aimed at tightening demurrage rules to conserve cars, according to word today. N.I.T.L. does not, however, suggest increase in demurrage rates or reduction in free time, a spokesman said. Suggested changes will be put up to vote by members of League, and if approved, will be submitted to Assn. of American Railroads for publication on 30-day posting of notice with Interstate Commerce Commission.

Fuel Delivery Curb Explained to Users

NPN News Bureau

NEW YORK, Feb. 28—Colonial Beacon Oil Co. has explained to its customers that, because of a tanker shortage, it must curtail deliveries of fuel oil to keep supplies at a minimum working level.

In a letter dated Feb. 19, the company pointed out that domestic users could help save fuel oil by turning thermostats down at night and when no one is at home; shutting off radiators in rooms that are not in use; closing bedroom doors at nights; and by keeping vents and fireplace flues closed when not in use.

"We shall all have to work together," the company said, "if the civilian oil supply is to continue through the heating season. We're doing our best to make a little go a long way and keep war production rolling. Maybe you can't carry a gun—but you can save oil."

(For details of eastern fuel oil delivery plan, See NPN Feb. 25, p. 15.)

May Use California 'Gas' Line To Transport Crude Oil

NPN News Bureau

LOS ANGELES, Feb. 27.—A study is being made of the possibility of converting the Stanpac natural gas line from Kettleman Hills to Richmond, Calif., into a crude oil pipeline.

However, the proposed conversion would require considerable development in the Buena Vista dry gas field and the laying of a new pipe line to supply Northern California with gas. As it is, the Stanpac line from Kettleman hills supplies about half the natural gas in northern California.

Wheel Balancing Extends Tire Life Up to 30%

Help Motorists Get Extra Mileage By Showing Effects of Unbalance

CLEVELAND

Most automobiles operated today are driven on tires and wheels that either are out-of-balance or out of alignment or both. Akron tire company experts estimate that AT LEAST 85% of all cars 2 years old and older need immediate wheel and tire check-ups if maximum tire mileages are to be obtained.

One tire expert expresses it this way: "It is an unequivocal fact that when a motorist changes, switches, or in any way disturbs a tire or set of tires (as originally put on by the manufacturer) he is almost certain to create a condition of unbalance."

The insidious thing about a wheel assembly that is out-of-balance or out of alignment is that the condition may not be obvious to the driver, who may drive the tires until they have 25,000 or 30,000 miles on them without being corrected.

This same driver might have gotten 30%, or even more extra miles from these tires had they been properly aligned and put in balance. Out-of-balance and out of alignment cost United States motorists millions of miles of tire wear yearly.

Though both misalignment and unbalance cause premature tread wear and have some other common characteristics, nevertheless, there is a vast difference between these two "tire bandits." In this article, wheel balancing will be discussed. Wheel alignment information will follow in an early issue.

* * *

Unbalance Explained

Unbalance or out-of-balance is a condition brought about by the fact that on every tire there is a light spot which must be counter-balanced by a heavy spot in the tube. If a tire is changed or the tube is disturbed a condition of unbalance is almost inevitable unless BY ACCIDENT the tube is replaced to exactly its original position. This seldom happens.

Therefore, any motorist who has had a puncture, a flat, or has changed a tire may be almost sure that at least one of his wheels is out-of-balance and that he is cheating himself out of a sizable portion of his normal tread expectancy.

This expectancy reduction varies with the amount of unbalance. Abnormal tread wear will continue until the wheel has been brought back to balance by a competent service man.

There is no such thing as a perfectly balanced tire. No factory has ever manufactured one. It used to be that the light spot on the tire was marked and that the metal valve of the tube could be lined up with this mark to bring about an approximate balance, but since tubes now have a light rubber valve, and since automobiles are built to be driven much faster than formerly, this old method is no longer good.

Balance Limits Set

Today, units of balance measurement have been established, and tire assemblies must be made to balance within strict tolerance limits. The unit of balance is the "ounce-inch" or "inch-ounce."

When a wheel is out of balance it is light someplace by so-many "inch-ounces"—the unit of measurement. This unit takes into account not only the amount of the weight itself, but also the distance from the center of the wheel. In other words, if it requires a 3-ounce weight to restore a wheel to balance, and the rim diameter is 16 inches (the popular size) the unbalance would be 24 "ounce-inches." This figure was arrived at by multiplying the weight (3 ounces) times the distance from the rim to the center of the wheel—which is 8" in the case of a 16" rim or 3 times 8 equals 24.

Car manufacturers require that balancing be held to close limits since they realize that unbalance causes much abnormal tread-wear, shimmey, tramp, and rapid wear of some mechanical parts of the car. Tire companies stay within the car manufacturers' specifications by testing all tires and grading them on the basis of their "ounce-inches" of unbalance. Here is how one tire manufacturer does it:

Group	Amount Unbalanced
0.5	0- 5 ounce-inches
1	5-10 ounce-inches
2	10-20 ounce-inches
3	20-30 ounce-inches
4	30-40 ounce-inches

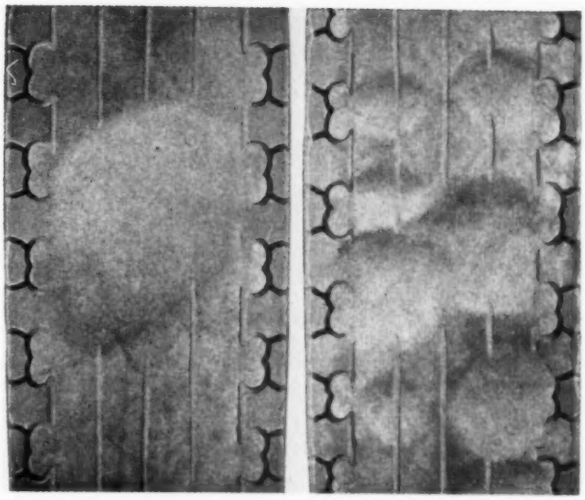
Tubes would normally be found to be at nearly perfect balance particularly since the adoption of light weight rubber valves, but the factory can deliberately produce tubes out-of-balance. In other words, since they extrude the tube stock through an expanding die, it can be operated to make the wall gauge thicker at a certain spot and hence make the tube heavier there—out-of-balance.

Tubes Checked

Tubes are then checked for out-of-balance and grouped like the tires into the same five classifications.

With tires and tubes so classified, all the tire company has to do when filling the car manufacturer's order is to match the classification of tire and tube, making sure that the heavy spot of the tube coincides with the light spot of the tire. Because of this, tire and wheel assemblies on new cars HAVE to be in proper static balance.

Suppose the driver of the new car gets a puncture and his



An unbalanced wheel may cause excessive wear in one spot (left) or a series of cuppings around the tire's circumference (right). Illustration from Rubber Manufacturers Assn. bulletin

Convince Your Customers That Tires Can Give 40,000 Miles of Service

If automobile operators are told how to get forty thousand miles from a set of tires and if they are CONVINCED that such mileages are not imaginary, then the rubber shortage may not be too serious. Drivers are being educated on tire care by tire manufacturers, oil marketers, automobile clubs, and many other agencies . . . via radio, in newspapers and magazines, by paid advertisement, and by word-of-mouth.

But it is also necessary that drivers be CONVINCED that 40,000 miles from a set of tires is not an accident but an honest expectancy for careful drivers who do not abuse their tires.

Sohio recognizes this need and has started asking drivers for mileage records. The response has been very good—so good in fact that plans are under consideration to organize a "40,000 Mile Club" of Ohio motorists.

Sohio's experience proves that it is easy to get valuable tire "testimonials" from car owners. Spreading this information to other drivers will give them faith in the rules of good tire care, and will give them confidence in THEIR ability to make their tires last while still continuing the operation of their automobiles.

NPN urges all oil marketers to ask all customers what their experience with tires has been. How did the long mileage driver achieve good results?

Publicize this "tire news" on station bulletin boards to keep the cars of your customers rolling.

wheel assembly is of Group 3 classification—a 20-"inch-ounce" tire counterbalanced by a 20-"inch-ounce" tube. The tube has to be removed for repair. Now if this tube is put back wrong so that its heavy spot coincides or approaches the heavy spot in the tire instead of the light spot, then the assembly will be out-of-balance as much as 40-"ounce-inches." A wheel this much out-of-balance will cause tremendous tread wear until it is brought back into proper balance by a competent repairman.

Balancing Tubes Is Difficult

Back in the days of the metal valve, the heavy spot of the tube was always near the stem, but today the heavy spot may be anywhere around the circumference of the tube. Therefore lining up the valve of the tube with the dot on the tire may be just exactly wrong, for the valve could be the lightest spot in the tube.

Oil marketers will help drivers get the maximum mileage from their tires if they urge them to have their wheels checked for balance. MOST OF THEM WILL NEED BALANCING. Many of them will need balancing so badly that a correction may save them from a loss of 30% or more of their tire mileage expectancy.

Oil marketers will further be doing their customers a favor if they point out the characteristics of unbalance that drivers should watch out for. These are spotty and abnormal wear and vibration of the steering wheel. Of course, by the time these symptoms are apparent, much of the tread has been wasted, which is why motorists should be urged to have their wheels checked now, and every time they change a tire.

Washington Authorities Tell How to Get Longer Tire Life

NPN News Bureau

WASHINGTON, Feb. 28.—With the rationing of camelback and retreads, it has become even more necessary that motorists take steps to conserve their tires and keep their cars in use.

American Automobile Assn., Consumer Division of Office of Price Administration and the B. F. Goodrich Co. have outlined standards for care of passenger car and truck tires, which oil marketers can pass on to their customers.

In a joint statement, Chairman Donald M. Nelson of War Production Board and Federal Loan Administrator Jesse Jones stressed the gravity of the rubber situation, said that every motorist "should look at his tires and say: 'That's all there is. There isn't any more'—and proceed to act accordingly."

The country does have a large stockpile of rubber, they said, and more is coming in, but that is just about enough to equip the great war machine this nation is building.

With a declaration that half of the 27,000,000 passenger cars in the U. S. have tires good for from 1 to 2 years, A. A. A. has urged a tire conservation program, and a reduction in driving speeds. "Motorists," the A. A. A. has said, "must face the stark reality that prolonging life of present cars and tires is vital to assuring individual transportation."

AAA's Tire Care Rules

A. A. A. has enumerated these rules for tire care:

"1. *Keep Tires Inflated at Recommended Pressure.* Each pound of underinflation increases rate of tread wear 12½%. Thirty per cent underinflation means 74% less mileage.

"2. *Reduce Speed.* Tires will last twice as long at 40 miles per hour as at 60 miles per hour.

"3. *Check Wheel Alignment Twice a year.* A tire half an inch out of line will be dragged sideways 87 feet every mile.

"4. *Avoid Striking Curb, Holes and Rocks.* Such injuries serve to break sidewalls and damage tires so that they cannot be retreaded.

"5. *Change Wheel Positions Every 5000 miles.* This will assure even wear of all tires and additional mileage.

"6. *Avoid Quick Starts and Stops.* This scuffs off valuable rubber from the tread.

"7. *Repair All Cuts, Leaks and Breaks Promptly.* This will assure protection of the tire casing. Blowout patches should be used only temporarily.

"8. *Slow Down at Curves.* Speeding around curves multiplies the wear on tires.

"9. *Have Tires of Proper Size and Do Not Overload Car.* This means the saving of valuable rubber and longer tire mileage."

OPA Lists 10 Rules

OPA Consumer Division said "the less you use your car, the longer your tires will last, anyone can see that" and listed the following as "10 more ways to lengthen the life of your tires":

"1. *Drive at Moderate Speeds.* Your tires wear out twice as fast at 60 as they do at 35.

"2. *Use Your Brakes with Care.* Jamming brakes and fast starts are sure to scuff the tire, leave precious rubber on the road.

"3. *Take Curves Slowly.* Your tires and you will both live longer.

"4. *Look Out for Bumps.* Stones, ruts, and rough roads are tough on tires. Bruising and scraping against the curb are bad medicine.

"5. *Keep Your Tires Properly Inflated.* See that the air-pressure recommended for your tires is always there. Check the pressure at least once a week. A pound or so too much air is better than not enough. Check valves to prevent leakage.

"6. *Keep Your Brakes Equalized.* Unequal braking shortens tire life by causing unequal wear.

"7. *Keep Your Wheels Aligned.* Wheel alignment should be checked every 6 months.

"8. *Cross-Switch Your Tires.* Wheel-to-wheel changes help tires wear longer. Shift them over 5000 miles, keeping the spare in use.

"9. *Repair Promptly.* Cuts, leaks, breaks and bruises need quick first aid to prevent permanent damage.

"10. *Keep Your Car and Tires Under Cover as Much as Possible.* Sun and air ruin rubber."

Announcing recently that tire needs of the Allies had forced a simplification of truck tire design so that 11 combination sizes now fill the needs for which 14 sizes of balloon and 14 high pressure casings were formerly used, President John L. Collyer of Goodrich laid down the following 3 rules for the care of truck tires:

Sets Rules for Truckers

"First, use only the correct type and size of truck tire as recommended on the basis of normal load weight, type of road to be traveled, climate and other factors that demand different kinds of tires.

"Second, do not overload, no matter how strong the temptation to pile on all the truck will hold. This is a costly and ill-advised practice that sacrifices, for a purely temporary advantage, mileage that may be urgently needed later on. Overloading accelerates tread wear and causes stresses and strains that frequently result in tire failure, serious accidents and losses. Inadvertent overloading can be avoided by following a simple mathematical formula of load analysis explained in the manual (a manual of truck tire care made available by the company.)

"Third, keep tires correctly inflated at all times, and do not 'bleed' or let air out of tires in a mistaken effort to relieve the extra air pressure built up on long runs. A certain amount of air pressure build-up in service is normal, and 'bleeding' causes a tire to flex more violently, building up more heat."

Kentuckians Aim Blow at Tire Jitters With Plans to Tell of Tire Longevity

LOUISVILLE—Kentucky Petroleum Marketers Assn., at its recent convention here, voted to inaugurate a campaign to acquaint the motoring public with the actual mileage still remaining in their tires, thus easing the "tire rationing jitters".

Following is text of K.P.M.A. resolution:

RESOLUTION

WHEREAS, crude rubber sources of the United States have been jeopardized by war activities, and;

WHEREAS, all existing crude rubber stocks in the United States have been reserved for military requirements, and;

WHEREAS, large existing stocks of new tires are being rationed to an extremely limited group of vehicle operators, and;

WHEREAS, these conditions have created a state of near panic in the minds of many motor car owners, who, as a result have laid up their cars without regard to the following facts:

a. That a rubber tire deteriorates almost as rapidly when not in use as it does when in use and properly cared for.

b. That present day quality tires have been giving 20,000 or more miles of service under high speed and essentially careless driving conditions.

c. That the average car today has tires with two to three years of service left in them if operated at reduced speeds and under care recommended by tire manufacturers.

d. That recapping and retreading will further extend the period of service which present existing tires will give, and;

WHEREAS, the motoring public should be informed as to the actual mileage possibilities of their present existing tire equipment;

THEREFORE, BE IT RESOLVED that the membership of the Kentucky Petroleum Marketers Association, at its Sixteenth Annual Convention, in Louisville, on Wednesday, February 11, 1942, take immediate steps in a mutual undertaking to inform the motoring public as to the potential service available in present tire equipment and the best means of securing this service, and;

BE IT FURTHER RESOLVED that a committee be appointed to immediately arrange for the mutual cooperation of the oil industry and others interested in keeping the necessary business life of the nation moving to the end that this information be made available to the motoring public by the most expeditious means available.

Truck Operators, Large and Small, Will Heartily Welcome

CHEVROLET'S "TRUCK CONSERVATION PLAN"

CONSERVE TIRES

CONSERVE OIL

CONSERVE ENGINE

CONSERVE BRAKES

Transportation is vital to victory. . . . Trucks are an important arm of transportation. . . . That's why truck operators everywhere will recognize Chevrolet's "Truck Conservation Plan" as a long forward step toward keeping America's trucks rolling. . . . Your Chevrolet dealer's "Truck Conservation Plan" can help you to get longer, stronger, more economical service out of your trucks. See him—today!

CHEVROLET MOTOR DIVISION
General Motors Corporation
DETROIT, MICHIGAN

CONSERVE GAS

CONSERVE TRANSMISSION

CONSERVE COOLING SYSTEM

CONSERVE EVERY VITAL PART

A MOBILE NATION IS A STRONG NATION

Always **SEE YOUR LOCAL CHEVROLET DEALER FOR SERVICE**

on any car or truck

Product Conservation Plan Launched by Oil Industry

NPN News Bureau

NEW YORK, Feb. 27—Plans for publicizing the Petroleum Industry War Council's nation-wide program for eliminating preventable waste of petroleum products and conservation of cars and tires, were outlined here today to representatives of oil trade publications.

B. I. Graves (Tide Water Associated) New York, chairman of the P.I.W.C. subcommittee on product conservation, presided at a luncheon given for oil trade press. W. H. Kershaw (Texaco), New York, is vice chairman. J. A. Miller (New Jersey Standard advertising manager), New York, is third member. The group is a sub-committee of the P.I.W.C. national marketing committee, of which B. L. Majewski (Deep Rock), Chicago, is chairman.

District advertising representatives of the P. I. W. C. have been appointed, as follows: District 1, H. L. Curtis (Shell), New York; District 2, Wesley I. Nunn (Indiana Standard), Chicago; District 3, George C. Gibbons (Mid-Continent Oil & Gas Assn.), Dallas; District 4, George B. Cramer (Powerine), Denver; and District 5, John E. Weiser (Gilmore Oil), Los Angeles.

At the luncheon meeting here, Mr. Graves explained general objectives of the conservation program. Mr. Kershaw also gave a brief talk. Then Mr. Miller explained the details.

The P.I.W.C. plan provides for no joint or co-operative advertising effort by the petroleum industry, Mr. Miller explained. Aim is to have individual companies incorporate the slogans and other promotional material in their own advertising. The subcommittee has prepared a portfolio of suggested copy ideas and art for folders, "A" sign boards, pump placards, windshield stickers, etc., which individual companies may adapt to their own needs.

Companies Handle Their Own

No folders, stickers or other material is to be printed by the P.I.W.C. subcommittee. Only exception is that orders are being taken for 24-sheet outdoor posters because these cannot be produced economically in small quantities. Orders will be accepted up to March 16 for shipment April 24.

First of these 24-sheet posters incorporates the slogan: "Oil is Ammunition—Use It Wisely". It pictures a tank, an airplane and a warship. The other poster features the slogan, "Care for your Car for Your Country". It shows an American eagle and a group of motor cars.

The petroleum industry will use its nation-wide advertising in newspapers, magazines, outdoor, radio and point-of-sale to impress the public with the urgent necessity of preventing the waste of petroleum products and of caring adequately for the millions of motor cars registered in this country, Mr. Miller said.

With the nation's service stations having approximately 50,000,000 contacts each week with car owners, station operators can impress the conservation program on motorists, Mr. Miller added. They should also emphasize to their customers that today motorists must care for their cars for their country.

Within the industry itself, it will be up to the oil companies to put the campaign across, to see that their employes and their contacts are acquainted with its objectives.

Includes Car Conservation

The product conservation program is not limited to gasoline only but includes fuel oil and other products. It also includes conservation of cars and tires. A list of 8 points for car conservation has been prepared, and another 8-point list which lays more stress on tires (*both of these lists are printed on this page—Ed.*) Among the points for car conservation is the recommendation for proper lubrication.

Ickes and Davies Approve

The industry's product conservation program has the enthusiastic approval and support of Petroleum Co-ordinator Ickes and Deputy Co-ordinator Davies, Mr. Miller said. It's now up to the industry to put it across, he added.

"It is optional with each company which of the slogans or campaigns is used in its own advertising, or whether it wishes to use part or both campaigns," said Mr. Graves.

Copies of the promotional material may be obtained by writing to:

Subcommittee on Product Conservation
Petroleum Industry War Council
Room 712, Chanin Building,
122 East 42nd Street,
New York, N. Y.

8 Ways to Prevent 'Gas' Waste

1. Make sure carburetor is clean and adjusted to the most economical mixture for efficient operation.
2. Have ignition system and spark plugs checked. Be sure engine is tuned up to top efficiency.
3. Have all moving parts checked. Regular lubrication lengthens car life and prevents waste of gasoline.
4. Drive carefully. Greatest gasoline economy is between 35 and 40 miles per hour. Greatest tire life is under 40.
5. Don't accelerate too fast. Don't use first and second gear longer than absolutely necessary. Sudden bursts of speed waste gasoline, wear out tires, endanger life and property.
6. Don't over-use the choke, or race the engine when starting. (Automatic chokes should be inspected.)
7. Be sure the car wheels are lined up properly to prevent excessive tire wear and waste of gasoline.
8. Have tire pressure tested regularly. Under-inflated tires and "wheel drag" waste gasoline—wear out tires.

How Motorists Can Help

1. Keep tires correctly inflated —soft tires wear rapidly.
2. Avoid sudden starts and stops . . . fast turns . . . scuffing tires against curb. These all grind off the rubber.
3. Switch tires (including the spare) around to equalize wear. The life of the tires will be prolonged.
4. Be sure car wheels are lined up properly or excessive tire wear results.
5. Be sure car is properly lubricated. Regular lubrication lengthens car life by preventing wear.
6. Be sure engine is running properly. Keep spark plugs and carburetor clean and properly adjusted.
7. Keep speed under 40. It's safer. Tires last longer—it lengthens car life—avoids waste of gasoline.
8. Avoid over-use of choke (or too rich gasoline mixture). It wastes gasoline and may thin crankcase oil.

Many Thousands of Defense Workers in the West Depend on Their Automobiles for Transportation

Special to NPN

SALT LAKE CITY—The West is a place of distance and the horse gave way to the automobile—with its necessary gasoline and oil and tires. And the modern counterpart of the range-riding cowboy is the commuting defense plant worker.

Around the pivotal center of Salt Lake City and Ogden, Utah, defense plants and allied construction will approximate a total expenditure of $500,000,000—sapping up the mineral wealth and strategic location of the mountain fastness which belong to the West.

Most of the estimated 90,000 migrant workers to come to the intermountain region and the 40,000 already here will travel by the automobile.

The general situation is so serious that a temporarily snow-blocked road in northern Utah brought a protest from military authorities that a one-hour automobile blockade caused a (censored) number of man-hours to be lost and evoked an ultimatum from Gov. Herbert B. Maw to the Utah State Road Commission "to keep that road open day and night."

Defense Workers Jam Roads

In Denver, Colo., workers at an ordnance plant (which is a twin of the one in Salt Lake City) are so delayed by the passage of a military convoy in the region that it becomes a choice between convoying military supplies and men or getting workers to the defense plant. You don't build superhighways through desert and mountains—but the government is building defense plants which in some cases cost in excess of 1000% of the previous evaluation of an entire county.

Traffic on the 37-mile road between Ogden and Salt Lake City, Utah's metropolitan centers, has increased in general 800%, and between Ogden and certain defense plant locations, traffic on the main highway has increased as much as 2000%, creating an almost hysterical demand for auxiliary access roads.

No Housing Available for Workers

One defense plant in the Salt Lake City area has had a daily average of 3500 automobiles in the parking area where only a green meadow farm existed a few brief months ago. Parking areas in some instances require more space than half of the essential defense units themselves.

Generally, no adequate housing exists closer than 3 miles to any sizable defense plant and in many cases not closer than 5 to 25 miles. Similarly, little or no transportation is available by common carrier passenger service—and what common carrier passenger service is available in most cases is with utility buses—gasoline fed and rubber shod.

Two important metal-producing plants are being constructed and operated in Nevada. No housing is available at the sites, so workers are forced to travel from a nearby town, 10 to 15 miles across a desert highway.

Another war-essential metal development is under way in southeastern Utah and even the mill and plant units are being trucked into the interior.

Hill Field, near Ogden, is 12 miles away from most workers, and common carrier transportation can't get closer than 3 miles.

Public Transportation is Lacking

Only three Utah cities have public transportation systems. One is a street-car system, the other two are buses. Only one major defense plant is served by an electric line. Approximately 12.5% of the workers on plants near metropolitan centers are served by common carrier.

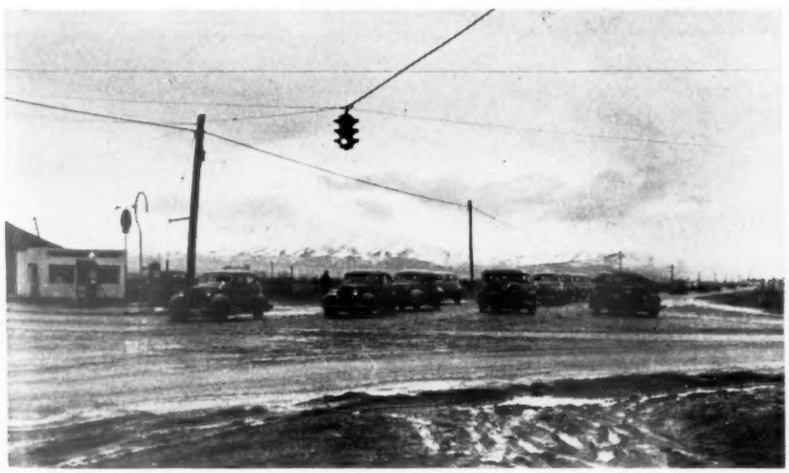
As Utah, Idaho and Nevada are included in the western theater of operations and communications—a war combat zone—and as Salt Lake City has been designated headquarters of the Ninth Corps Area, Army censorship is more pronounced here than in other centers.

Although figures are censored, generally Utah will receive more defense units in the next few months, and the already serious problem of transportation will be aggravated and not relieved.

Utility buses might be excepted to the tire restrictions. But companies are now aware of the fact that even with a priorities rating and an allocation number, a new bus cannot be obtained quick enough when the War Department announces a population increase of 5000 upon a ten-day notice. Next week it may be another 10,000 in another city of already burdened housing and transportation problem.

Final proof of situation's seriousness—beyond the scratching pen of a censor—is when a chamber of commerce says "No, thanks" to a $20,000,000 plant.

Coming or Going—Rocky Mountain Defense Workers Have to Drive



These solid lines of cars are a daily sight on the outskirts of Salt Lake City, Utah, where the private automobile is the only means of transportation to some of the defense projects tucked away in the nearby mountains. Tire rationing threatens this means of transporting tens of thousands of defense workers in this area. Same situation prevails in dozens of other areas.

'Thumbs Up' Attitude Characterizes Missouri Jobber's Wartime Planning

Oil jobbers, the same as anyone else, sometimes get to feeling pretty blue. They feel that conditions in their territory are "different".

Perhaps this wartime visit with Joe Salter, pioneer independent jobber in Missouri, who has always had to fight a tough battle in a state where there are no easy pickings, will make you appreciate your own situation better.

For war has brought problems to that jobber, which are not likely to be much worse anywhere. But Joe is still smiling, fighting—and working. And he will continue to run his business.

MARK TWAIN, whose home was in Hannibal, Mo., once won a large cash prize from the late Joseph Pulitzer, publisher of the *New York World*, by answering the question as to why men of apparently equal intelligence are so vastly unequal in achievements. Twain's answer, one of several thousand in a contest, read:

"The measure of a man's success in life is found in the measure of honest hard work he puts into his job."

Joe A. Salter, whose home is in Kirksville, Mo., on route 63, about 60 miles from Mark Twain's home town, is proof that this homely aphorism applies in the successful management of an independent oil jobbing company.

For Mr. Salter, who owns and operates the Salter Oil Co., has made a success in life and the oil business in a spot where the going at its best is plenty tough. Under war conditions, it is even tougher.

The Salter Oil Co. is not one of the country's largest jobber operations. In fact there are several, but not very many, independent oil jobbers in Missouri larger than this concern. In the Mid-West it would be catalogued in the group composed of the second highest classification of independent jobbers. This group comprises 8% of the country's 10,000 oil marketers

Gasoline is hauled to Salter Oil Co. bulk plant by their own 3800 gallon transport truck. The round trip from the supplier's plant in Coffeyville, Kans., requires 24 hours

There are better than 60,000 miles on the tires of this company transport truck. Jobber Salter says they are just beginning to be broken in. Tires are checked often, frequently switched, never overloaded nor driven fast

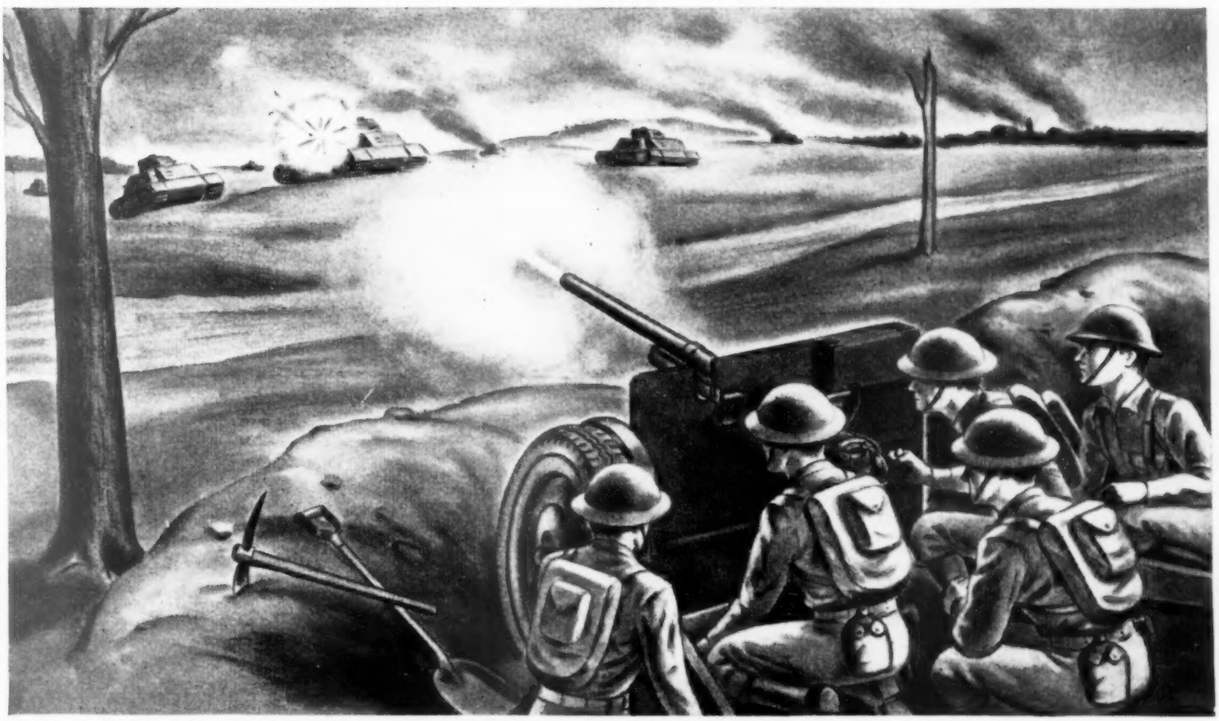
★

Storage tanks at Salter Oil Co. bulk plant in Kirksville. Late improvements include vapor-saving devices. A new, more efficient and safer cat walk has just been completed

★

The Best Defense Against *Tanks*

Tanks are almost impregnable till they meet these U. S. 37 mm Anti-Tank Guns and the new 75 mm "Tank Destroyers"—mobile, fast-firing guns that hurl armor-piercing projectiles with deadly accuracy.



The Best Defense Against *Waste*

In these days, when waste of your product is a waste of defense effort, when you safeguard your drums you help safeguard America.

And just as there is a *best* defense against tanks, there is a *best* defense against *waste*. That defense—an impregnable defense against pilferage, leakage and other losses—is provided by Tri-Sure Closures. The Tri-Sure seal prevents tampering, because it cannot be removed unless deliberately destroyed. The Tri-Sure plug prevents leakage, because it is held tightly in place. The Tri-Sure flange assures complete drainage, because it is flush with the inside of the drumhead.

Take the first step now to make every drum a fortress for your product—to make every shipment safe. Write for complete information about Tri-Sure Closures.

Tri-Sure
Reg. U. S. Pat. Off.
CLOSURES

AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

when classed by their annual gallonage, and runs from 500,000 to 999,999 gal. annually. Seven per cent of the country's independent jobbers run over a million, while 35% run between 100,000 and 249,999 gal.

So while Mr. Salter likes to refer to himself and his company as a "little fellow operation", it is really much more than that.

Operates in 2 Counties

The operations are in 2 counties, Schuyler and Adair. One side of the territory consists entirely of V-shaped ridges covered with scrub oaks. A few cabins are scattered through this country, inhabited by very poor natives who eke a questionable existence out of the land—some doing a little coal mining. Their only petroleum requirements consist of a little "lamp oil".

With the exception of a few towns, the balance of the territory is composed of fairly good farms. Raising cattle is the principal occupation of the farmers, though they do grow tobacco and other crops.

Most of these farms have tractors, a few heat with oil, they all have at least one truck and an automobile. U. S. Route 63 runs through the territory, and during normal times produces a good tourist trade business.

This leaves the town of Kirksville, Green Top and a few other small towns from which to get business. Kirksville *did* have a population of slightly more than 10,000 people. It is a beautiful, small city—a school town. It is the home of Northeast Missouri State Teachers College, usually with an enrollment of more than 1000 students from 20 states.

Kirksville is also the home of Kirksville College of Osteopathy and Surgery, with normal attendance of around a thousand students from all states and many foreign countries.

These colleges and several hospitals in the town brought visitors by car from all over the country, which of course helped the oil business. Now the war is taking a heavy toll of the students. Visiting by automobile from any distance is practically a thing of the past.

Area Has No Defense Plants

There are no defense projects of any kind within 200 miles of Kirksville. The nearest war plants are located at Burlington, Ia., St. Charles and Lake City, Mo. These plants and the Army have already drawn heavily on the young population of Kirksville. As a result, the former 10,000 population has decreased about 1800.

There are 14 oil bulk plants in Kirksville, and so many service stations—practically all with different posted prices—that they are hard to count.

Perhaps this picture of one Missouri jobber's business seems gloomy. It is rather dark. It may be a preview, in a way, of what may be in store for other jobbers as the War progresses.

Motto Is to Work Hard

But Joe Salter is not singing the blues. He is following that Mark Twain formula of his by putting a lot of honest hard work into his job. Undoubtedly that is why his fellow Missouri independent jobbers made him head of their state association on February 12, to lead them during this critical time.

A study of this jobber's operations by someone looking for the unusual in the sense of something novel, unheard-of or new—"newfangled" as Joe Salter calls it—would draw a blank.

The office is a little room in one corner of Mr. Salter's home. There is a desk, a table, a couple of chairs, an adding machine, a portable typewriter and some files.

Keeps Books Up-to-Minute

All of the company's records are kept by Mr. Salter personally. He does his paper work at night. He never goes to bed until he is through with it. Sometimes it is 1 or 2 o'clock before it is finished. This includes a com-

★

One of the Kirksville stations of Salter Oil Co. This station has a 4000-gal. above-ground storage tank

★

★

One of Salter Oil Oil Company's dealer accounts. Both computer and visible pumps are used at all of the company stations

★

"Chalk that sale up to Lana Turner!"

What's a Good Gulf dealer got that gets 'em?

Well—just to mention *one* thing—he has Lana Turner and 708 other famous film stars selling his products . . . selling them hard.

Here's the way it works:

Hundreds of thousands of car owners all over the country listen to Hollywood's most glamorous personalities in one of the best-written, directed, and produced shows you've ever heard. Yes, sir! Gulf's ace radio show—the Screen Guild Theatre—is proud of offering the biggest, finest, bestest selection of 4-star talent of any program on the air!

So, it's no wonder Good Gulf dealers are feeling mighty fine. And as a matter of fact, the star-studded Screen Guild Show is only one of many reasons why the Gulf franchise is a plenty good thing to have. Better investigate.

GULF

Gulf Screen Guild Theatre
"The season's greatest radio show"
SUNDAY NIGHTS—7:30 E.S.T.
COLUMBIA CHAIN

Included in the operations of Salter Oil Co., Kirksville, is this modern tourist court. To the right is one of the company's 10 service stations. Above the station is a popular cafe, all operated by the company

plete accounting record on the operation of 10 company-owned stations, between 10 and 20 dealer accounts, 2 bulk plants, a gasoline motor transport line, 3 delivery trucks, a modern tourist cabin operation, consisting of 8 cabins.

Mr. Salter's early training as a railroader and Standard Oil agent and manager has resulted in his policy of putting records in shape every night so that if an auditor called the first thing in the morning, everything would be ready for him.

Mr. Salter would prefer to have this work done by a clerk, but feels that under present conditions it is up to him to do it himself.

A perpetual inventory on stock is kept, but as a double precaution, a physical inventory is taken on all products, by Mr. Salter personally.

The company's 85,000 gallon Kirksville bulk plant and warehouse is located about 2 blocks from the office, where frequent inspections can be made. The tanks were painted in the past year, for conservation, and are in fine shape. A recent wartime addition to the plant is the installation of 4 vapor-saving devices. These were purchased some time ago, but were only recently installed. Hence there is no record yet available as to their saving.

Due to the fact that the company fills the bulk plant storage tanks from its own 3800-gal. transport, which hauls gasoline from Coffeyville, Kans., there was considerable wastage from evaporation.

Installs Vapor-Saving Equipment

Mr. Salter, in looking for ways and means to save money at the bulk plant, gave considerable study to evaporation, and believes that all jobbers, if they can get the equipment, would do well to install vapor-saving equipment.

He points out that it saves money by reduction in evaporation, affords protection against buckling or bursting of tanks, minimizes fire hazard, keeps moisture out of storage and preserves the octane and starting elements of the gasoline.

Jobber Salter has always personally supervised his truck operations. All this new business that you hear so much about—switching tires, watching the pressure, not overloading and the like—is an old story with him.

Truck Tires Go 60,000 Miles

He pointed to a set of tires on one truck that had gone 60,000 miles, and you could hardly tell they had been worn. "Some day NATIONAL PETROLEUM NEWS is going to ask for some records on truck tires and I will really give them something to shoot at," he said.

Solvents Prove Profitable

A very profitable wartime business, Mr. Salter has found, is the sale of naphtha and solvents. In his territory, the individual sales of this line is rather small, making it impractical for the average jobber to handle. So he contacted other jobbers for a radius of 50 miles and agreed to stock it. They, in turn, pick it up at his bulk plant. In Kirksville, Salter Oil Co. has 100% of the dry cleaning plant's business; a sizable sum in a college town.

"No jobber, if he can keep from it", says Mr. Salter, "should put all his eggs in one basket." Joe Salter has never been in favor of having his finger in too many pies, for he thinks it is poor policy. But as he explains, the whole history of the oil business has been one of good times and bad.

One of the projects he hopes to use to replace depleted income from the oil business is a tourist camp, only recently completed. The income from this, plus the additional business that will be drawn to the service station, which is part of the camp, and the cafe run in connection with the project, is expected to bring in a fairly nice income, especially in the summer.

This camp, which represents an investment of $30,000, consists of 8 tourist cabins—2 doubles and 4 singles—all adjoining a completely equipped service station. *Above* this station is an unusual combination—a cafe. This cafe, which incidentally doesn't sell drinks other than the soft variety, is doing a thriving business, not only with tourists, but with local residents as well.

The cabins have rooms that would put an ordinary hotel to shame. They are steam heated, all equipped with private baths, comfortable beds and regular hotel furniture. Equipment includes venetian blinds on the windows and good looking knotty pine walls. The rates run from $2 to $2.75 nightly, single, per room. The maid who takes care of the rooms, also takes care of the ladies restroom at the adjoining station.

The station, which was built at the same time the tourist camp was put in, is modern and kept spic and span. A complete line of accessories are sold. Although this station is newer than the company's other stations, it is typical of a good operation under close owner supervision.

Sells What Customers Want

National Refining Co. products are distributed and make up the largest volume of sales by the Salter Oil Co. Practically all nationally advertised motor oils are also handled. "If enough calls are received for any product, it is stocked," said Mr. Salter, which is another way of saying "don't put all your eggs in one basket".

This also answered the writer's question as to why all of the company's stations had visible pumps in addition to several type of computers of various makes. "If the juice went off for a day, where would we be without visibles?" Joe asked.

Personnel with the Salter Oil Co., like that of many other jobbers, is a problem. Mr. Salter sees no solution to it except by hiring older men and giving them more supervision.

He prefers to have snappy young boys in uniform, but snappy young men in uniform are needed elsewhere right now. So a good honest elderly man in blue denim, with plenty of supervision is the answer, at least in Salter Oil territory.

Mr. Salter has as his man "Friday", G. A. Davis, who relieves the boss of as much work as possible. Mr. Davis can drive a truck, run a station, call on customers and promote new accounts.

Like Mr. Salter, he believes things are tough, but he never stops smiling. And he looks to the future of the independent oil jobber with optimism.

Equipment Personals

A. D. Carriger

O. E. Reedy

A. D. "Dud" Carriger and **O. E. Reedy** have been appointed to new positions by Erie Meter Systems, Inc., Sales Manager **W. B. Johnson, Jr.,** announces.

Mr. Carriger will head the central division at Chicago. He was formerly Southeastern division manager, but prior to that was located in Chicago. He has marketed oil equipment for over 30 years.

Mr. Reedy, formerly in New Orleans, will manage the southern division at Atlanta. This division includes South Carolina, Florida, Alabama, Louisiana, Tennessee, Mississippi and Georgia. Mr. Reedy has been with Erie for several years.

* * *

F. Gladden Searle

F. Gladden Searle, widely known as an executive of the can industry, has been appointed director of sales for the Crown Can Co. He was previously vice-president in charge of sales and advertising for Continental Can Co. Mr. Searle joined Continental as a salesman soon after his return from France in 1919 where he was a member of the A.E.F. He will make his headquarters in Philadelphia.

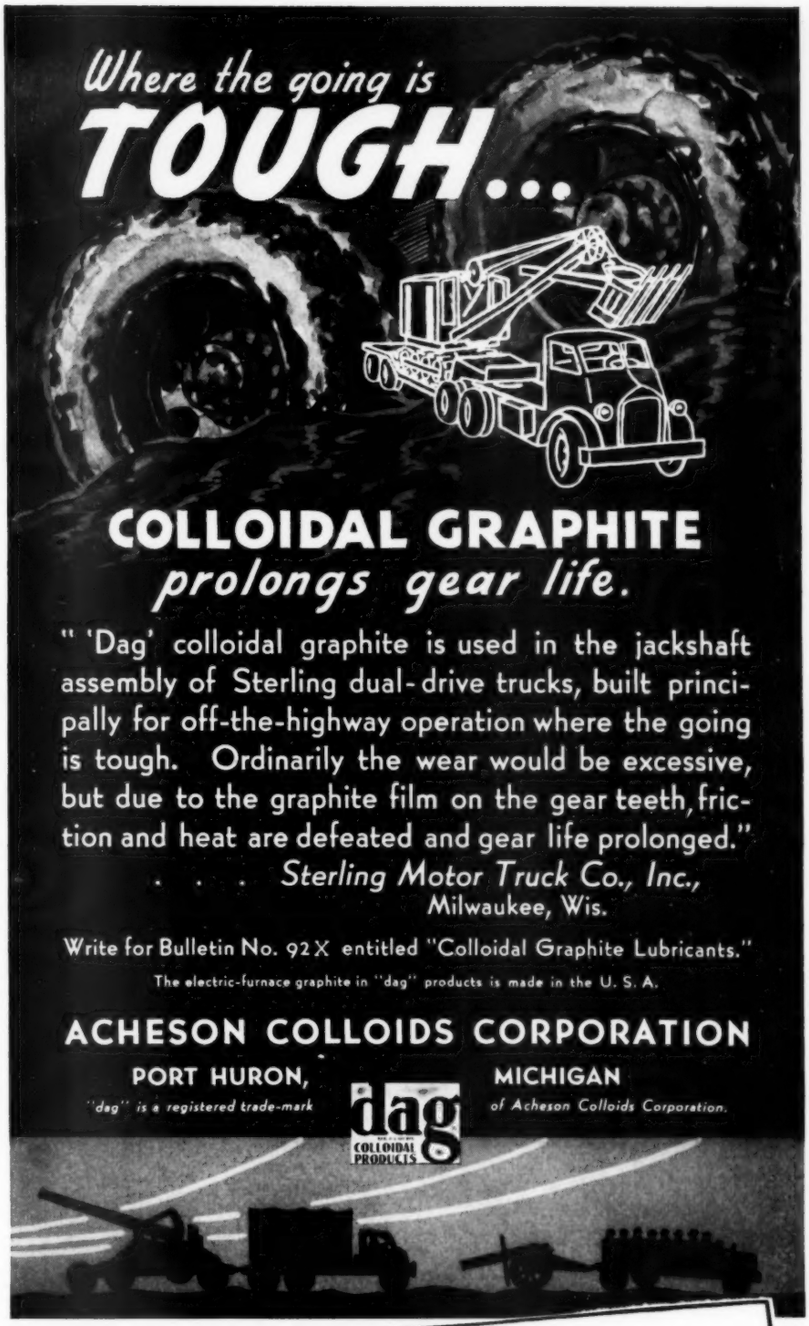
* * *

George Stevenson, sales engineer, has been appointed assistant manager of American Meter Co.'s Pacific Coast factory and sales service with headquarters in Los Angeles. He has been connected with the company for 14 years.

Mr. Stevenson is a member of American Gas Assn., Pacific Coast Gas Assn., California Natural Gasoline Assn., and Southern California Meter Assn.

Crown Oil Moves

Crown Oil Corporation announces removal of its offices from Rockefeller Plaza, New York City, to 15 Washington St., American Insurance Bldg., Newark, N. J.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TOUGH...
COLLOIDAL GRAPHITE
prolongs gear life.
" 'Dag' colloidal graphite is used in the jackshaft assembly of Sterling dual-drive trucks, built principally for off-the-highway operation where the going is tough. Ordinarily the wear would be excessive, but due to the graphite film on the gear teeth, friction and heat are defeated and gear life prolonged."
. . . Sterling Motor Truck Co., Inc., Milwaukee, Wis.
Write for Bulletin No. 92X entitled "Colloidal Graphite Lubricants."
The electric-furnace graphite in "dag" products is made in the U. S. A.
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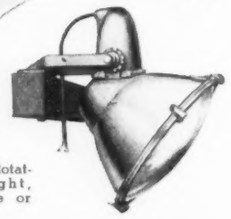

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Congress Told of Need For Higher Oil Prices

(*Continued from page 7*)

Co-ordinator Ickes testified (*NPN Feb. 18, pages 3 and 5*). At that session, questions of committee members indicated interest in legislation to give "legal status" to OPC and its advisory committees. This was not referred to last week, but the question of congressional legislation to provide definite protection from anti-trust prosecution for oil companies working together in the war effort popped up again in the second question asked of Mr. Davies.

Anti-Trust Up Again

Again OPC was given opportunity to recommend legislation to the committee, and again OPC declined.

Mr. Davies said he had no recommendations to make at present, and explained that the problem was not alone with the oil industry. He asked that Mr. Marshall express his views on this, and the OPC chief counsel reiterated that it was a problem which "cuts across all industry and affects all of these defense agencies." Mr. Marshall said he had no doubt but that an Act of Congress would provide more adequate shelter from anti-trust prosecution than the plan now working. This plan, he explained to the committee, is based on the Department of Justice's stated views that acts done in accordance with a governmental request or directive are not violations of the anti-trust laws.

When Mr. Marshall had finished discussing this procedure, Chairman Lea said jokingly:

"I take it that the advice given by the Attorney General is not such as you would give a client who was paying you a fee."

Boyd Gives Views

Chairman W. R. Boyd Jr., of Petroleum Industry War Council testified on the industry's wholehearted backing of OPC. Questioned for his views on anti-trust angle, he said he believed Congress should be willing to pass legislation which would remove all doubts as to possible prosecution at some later date for acts carried out in accordance with governmental requests.

Other OPC officials called upon by Mr. Davies to answer some of the subcommittee's questions were Refining Director Wright W. Gary and Assistant Deputy Co-ordinator Robert E. Allen.

Mr. Gary outlined to the committee OPC's plans for 3-way refinery units to turn out 100-octane gasoline, toluene and butadiene (*NPN Feb. 25, p. 17*). He said these plants could be built in 18 months, provided a fairly free flow of materials.

OPC's methods and purpose in certifying recommended crude production rates to the various states were explained by Mr. Allen. He said the

178 WAR-OIL ORDERS *

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objective is to see that all states can continue to contribute to the war effort with a "sustained ability to produce".

If reserves of any particular state are depleted later in the war when steel for transportation facilities into new areas of production—which would have to be found—was harder to get, the industry would be faced with serious supply difficulties, he added.

A.P.I. Names Committee On Fire Prevention

CLEVELAND, Feb. 28.—H. J. Wilson, San Francisco, Tide Water Associated Oil Co., has been named chairman of the American Petroleum Institute's Division of Marketing 1942 Committee on Fire Prevention. D. V. Stroop of A.P.I. was named secretary. E. V. Weber, chairman of division's General Committee appointed the following members to the fire prevention committee:

Donald A. Bering, San Francisco, Shell; R. W. Black, Elizabeth, N. J., New Jersey Standard; J. H. Brown, New York, Tide Water Associated; F. A. Epps, Dover, N. J., Spartan Oil Co.; O. H. Gundlach, New York, Sinclair; H. H. Hall, San Francisco, California Standard; Stanley Hargen, New York, Socony-Vacuum; Frank Harrison, Chicago, Pure; R. T. Henderson, Cleveland, Ohio Standard; J. H. Hutchinson, Cushing, Okla., Cushing Refining & Gasoline Co.; A. L. Knipping, Jr., Los Angeles, General Petroleum Corp.; Earl L. Kullmann, Milwaukee, Socony-Vacuum; F. R. McLean, Detroit, Socony-Vacuum; Thomas Montgomery, Sarnia, Ont., Canada, Imperial Oil, Ltd.; J. Howard Myers, Philadelphia, Atlantic; J. E. Niland, Houston, Humble; R. C. Nitschke, New York, Standard Vacuum Oil Co., Inc.; C. D. Norris, New York, Texaco; C. W. Smith, Chicago, Indiana Standard; H. Emerson Thomas, New York, Phillips; C. E. Townsend, Philadelphia, Sun; and A. H. Vineyard, New York, Shell.

TRADEMARKS

The following are trademark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Munsey Building, Washington, D. C., trademark specialists.

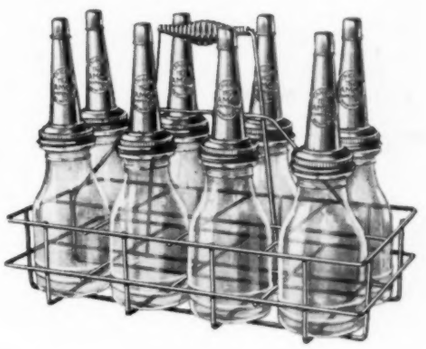
ZIM, Ser. No. 448,680, Pawling Refining Corp., Port Chester, N. Y. Filed: Nov. 15, 1941. For degumming, desludging, motor cleaning preparation. Published: Feb. 17, 1942.

PARABO, Ser. No. 449,664, The R. H. Bogle Co., Alexandria, Va. Filed: Dec. 22, 1941. For moth destroyer preparation. Published: Feb. 17, 1942.

Drawing lined for blue and red, Ser. No. 448,892, The Atlantic Refining Co., Philadelphia, Pa. Filed: Nov. 25, 1941. For lubricating oils. Published: Feb. 17, 1942.

ATLANTIC—a—drawing lined for blue and red, Ser. No. 448,893, The Atlantic Refining Co., Philadelphia, Pa. Filed: Nov. 25, 1941. For lubricating oils. Published: Feb. 17, 1942.

Fanciful drawing, Ser. No. 448,895, The Atlantic Refining Co., Philadelphia, Pa. Filed: Nov. 25, 1941. For lubricating oils. Published: Feb. 17, 1942.



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COMING MEETINGS

MARCH

Oil Trades Assn. of New York, Annual Meeting & Election of Officers, Waldorf-Astoria Hotel, N. Y., Tues., March 10.

American Petroleum Institute, Div. of Production, Pacific Coast District, Spring Meeting, Biltmore Hotel, Los Angeles, Calif., Tues., March 10.

Illinois Petroleum Marketers Assn., Annual Convention, Hotel Pere Marquette, Peoria, Ill., Tues.-Thurs., March 10-12.

Empire State Petroleum Assn., Inc., Annual Meeting, Onondaga Hotel, Syracuse, N. Y., Thurs., March 12.

Wisconsin Petroleum Assn., Annual Convention and Equipment Show, Schroeder Hotel, Milwaukee, Wis., Wed.-Fri., March 18-20.

American Society of Mechanical Engineers, Spring Meeting, Houston, Tex., Mon.-Wed., March 23-25.

Retail Gasoline Dealers Assn. of Michigan, Annual State Convention, Pantland Hotel, Grand Rapids, Mich., Tues.-Wed., March 24-25.

Western Petroleum Refiners Assn., 30th Annual Meeting, Jefferson Hotel, St. Louis, Mo., Wed., March 25.

American Petroleum Institute, Div. of Production, Mid-Continent District, Spring Meeting, Mayo Hotel, Tulsa, Okla., Thurs.-Fri., March 26-27.

New York Oil Heating Assn., Inc., Annual Dinner Dance, Hotel Pennsylvania, New York, N. Y., Sat., March 28.

APRIL

New Jersey Oil Trade Assn., Annual Spring Frolic, Robert Treat Hotel, Newark, N. J., Thurs., April 9.

American Petroleum Institute, Div. of Production, Eastern District, Spring Meeting, William Penn Hotel, Pittsburgh, Pa., Thurs.-Fri., April 9-10.

Midwest Power Conference, Annual Meeting, Palmer House, Chicago, Ill., Thurs.-Fri., April 9-10.

American Institute of Mining & Metallurgical Engineers, Cincinnati, O., Wed.-Fri., April 15-17.

National Petroleum Assn., 39th Semi-Annual Meeting, Hotel Cleveland, Cleveland, O., April 16-17.

Fuel Oil Distributors Assn. of New Jersey, 7th Annual Convention, Hotel Berkeley Carteret, Asbury Park., N. J., Thurs.-Fri., April 16-17.

American Chemical Society, 103rd Meeting, Memphis, Tenn., Mon.-Fri., April 20-24.

American Assn. of Petroleum Geologists, 27th Annual Meeting, Cosmopolitan Hotel, Denver, Colo., Tues.-Fri., April 21-24.

Petroleum Industry Electrical Assn., Washington-Youree Hotel, Shreveport, La., Wed.-Fri., April 22-24.

MAY

American Institute of Chemical Engineers, Semi-Annual Meeting, Boston, Mass., Mon.-Wed., May 11-13.

Natural Gasoline Assn. of America, 21st Annual Convention, Mayo Hotel, Tulsa, Okla., Wed.-Fri., May 13-15.

International Petroleum Exposition, Tulsa, Okla., Sat.-Sat., May 16-23.

National Assn. of Purchasing Agents, (Oil Company Buyers' Group), Waldorf-Astoria Hotel, New York, N. Y., Mon.-Thurs., May 25-28.

JUNE

American Society of Mechanical Engineers, Semi-Annual Meeting, Cleveland, Ohio, Mon.-Thurs., June 8-11.

Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham Manor, N. Y., Tues., June 9.

American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., Mon.-Fri., June 22-26.

New Jersey Oil Trade Assn., Summer Golf Outing, Newark, N. J., Thurs., June 25.

SEPTEMBER

Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham Manor, N. Y., Tues., Sept. 8.

OCTOBER

American Society of Mechanical Engineers, Fall Meeting, Rochester, N. Y., Mon.-Wed., Oct. 12-14.

Ohio Petroleum Marketers Assn., Annual Convention and Marketing Exposition, Hotel Deshler-Wallick, Columbus, Ohio, Wed.-Thurs., Oct. 20-21.

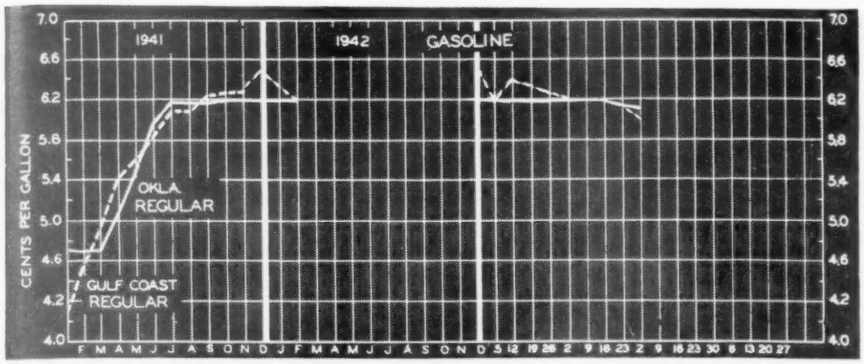
National Lubricating Grease Institute, 10th Annual Meeting, New Orleans, La., Sun.-Thurs., Oct. 25-29.

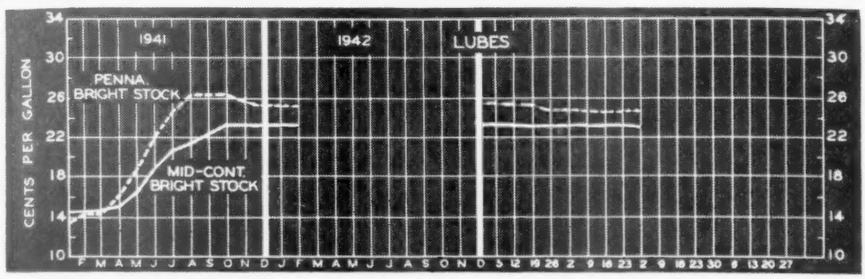
1942 Illinois Mineral Industries Conference, Campus, University of Illinois, Urbana, Ill., Fri.-Sat., Oct. 30-31.

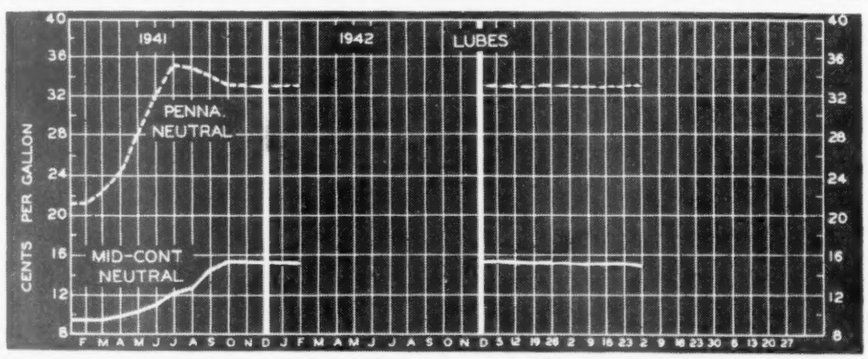
STATISTICS

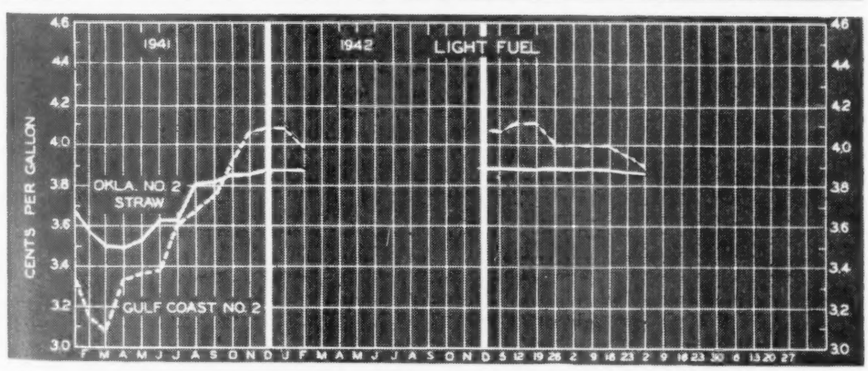
Refinery Prices

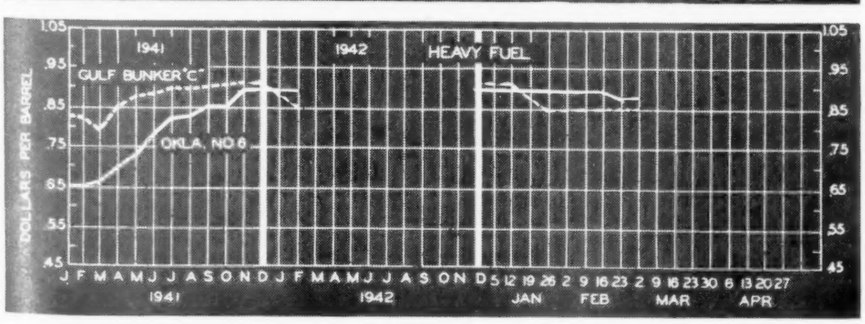
Monthly prices in graphs are averages of daily high and low prices shown in Platt's Oilgram Weekly prices are averages of high and low prices shown in Monday Oilgram, and in NPN











G. C. R. A. Stocks Report

(Compiled by Gulf Coast Refiners Assn. from reports of member companies. Figures in barrels.)

	Feb. 15	Feb. 1
Gasoline Stocks, Total	2,237,656	1,928,545
Aviation Gasoline	260,935	209,756
Motor Fuel	1,773,006	1,594,244
Naphtha	203,695	124,555
Kerosine	152,632	121,093
Diesel Gas Oil	554,996	614,751
Diesel Fuel	37,853	38,543
Gas Oils, other types	1,306,205	1,337,868
No. 5 Fuel Oil	443,282	416,253
Bunker "C" Fuel Oil	666,743	588,666
Cutback Asphalt	49,876	56,879
Crude Runs (daily average)	120,069	117,975

Pennsylvania Lubricating Oils

(Compiled by National Petroleum Assn. from reports of all companies which refine Pennsylvania grade crude oil. Figures in barrels)

	Production Jan., 1942	Inventory Jan. 31, 1942	Inventory Dec. 31, 1941	Inventory Jan. 31, 1941
1. Raw Long Residuum	85,982	49,847	48,364	31,903
2. 600 Steam Refined Stock	329,403	262,726	274,730	256,634
3. Other Steam Refined Stock	39,581	78,819	79,488	115,778
4. Finished Dewaxed Long Residuum	64,697	70,597	64,940	75,694
5. Bright Stock	187,164	363,047	338,734	463,609
6. Viscous Neutral	86,620	74,126	64,382	64,748
7. Viscous Neutral	104,474	77,079	75,340	115,600

Item 1 includes all raw long residuum below, and not salable as, 600 fire.

Item 2 includes all steam refined stock commonly sold or used as 600 and as raw material for bright stock.

Item 3 includes all material not reported in items 1 & 2.

Item 5 does not include any material reported in item 4.

Item 6 includes viscous neutral below 180 vis. but not below 142 vis. at 100.

Item 7 includes viscous neutral 180 vis. at 100 and above.

Summary of Forecasts for March 1942

(Bureau of Mines figures; thousands of barrels)

	Forecast March 1942	Forecast Feb., 1942	Actual March 1941
Demand for Motor Fuel*			
Domestic demand			48,760
Exports			1,738
	55,600	47,700	50,498
Supply of Motor Fuel:			
Straight-run and cracked gasoline production	53,590	48,880	48,176
Natural gasoline used at refineries	3,910	3,720	3,774
Total refinery production	57,500	52,600	51,950
Benzol and other natural gasoline	1,900	1,800	1,439
Imports	.....	.....	1
Increase in finished stocks	3,800	6,700	2,892
Available supply	55,600	47,700	50,498
Crude-oil Requirements:			
Per cent yield of gasoline from crude	44.00	43.20	43.38
Refinery crude required	121,800	113,150	111,059
Daily average	3,929	4,041	3,582
Foreign crude runs	3,600	4,000	3,839
Exports	5,700	5,700	1,988
Fuel and losses			1,754
Total demand for domestic crude	123,900	114,850	110,962
Daily average	3,996	4,101	3,579
Increase in domestic stocks	.....	.....	1,855
Actual production	.....	.....	112,817
Daily average	.....	.....	3,639

*The term "Motor Fuel" as used in this report includes gasoline, naphtha, and benzol used for all purposes, but does not include heavier distillates used in the operation of tractors or burned in Diesel engines.

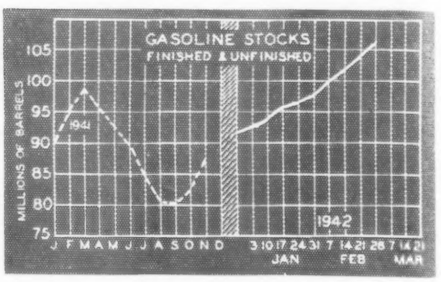
STATISTICS

Refinery Operations

Monthly figures are actual as reported by Bureau of Mines. Weekly figures are as estimated by American Petroleum Institute on Bureau of Mines basis, except crude stocks which are as reported by Bureau of Mines.

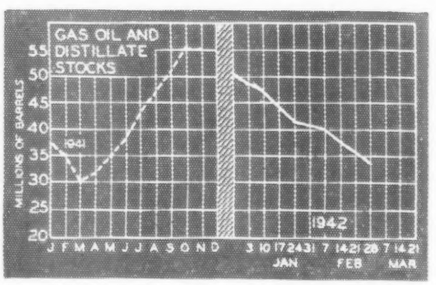
(American Petroleum Institute figures in thousands of barrels of 42 gallons each. Figures include reported totals plus an estimate of unreported amounts and are therefore on a Bureau of Mines basis.)

Districts	Daily Potential Refining Capacity Week Ended Feb. 21	Daily Potential Refining Capacity Week Ended Feb. 14	Per Cent of Refining Capacity Reporting Week Ended Feb. 21	Per Cent of Refining Capacity Reporting Week Ended Feb. 14	Daily Average Crude Runs to Stills Week Ended Feb. 21	Daily Average Crude Runs to Stills Week Ended Feb. 14	Per Cent of Reporting Capacity Operated Week Ended Feb. 21	Per Cent of Reporting Capacity Operated Week Ended Feb. 14
East Coast	714	714	100.0	100.0	566	513	79.3	71.8
Appalachian	174	174	84.5	84.5	167	147	96.0	84.5
Ind., Ill., Ky.	784	784	84.9	84.9	718	720	91.6	91.8
Okla., Kans., Mo.	418	418	81.1	81.1	347	347	83.0	83.0
Inland Texas	266	266	65.0	65.0	192	179	72.2	67.3
Texas Gulf	1,130	1,130	91.3	91.3	1,003	1,020	88.8	90.3
La. Gulf	176	172	94.9	94.8	181	158	102.8	91.9
N. La., Ark.	97	97	51.5	51.5	85	85	87.6	87.6
Rocky Mt.	138	138	50.7	50.7	86	87	62.3	63.0
California	787	787	90.9	90.9	544	516	69.1	65.6
TOTAL U. S.—B. of M. Basis	4,684	4,680	86.9	86.9	3,889	3,772	83.0	80.6
U. S.—B. of M. Basis Feb. 22, 1941					3,568			



	Gasoline Production at Refineries inc. Natural Blended Week Ended Feb. 21	Gasoline Production at Refineries inc. Natural Blended Week Ended Feb. 14	Stocks of Finished and Unfinished Gasoline Week Ended Feb. 21	Stocks of Finished and Unfinished Gasoline Week Ended Feb. 14	Total Stocks Gas Oil & Distillates Week Ended Feb. 21	Total Stocks Gas Oil & Distillates Week Ended Feb. 14	Total Stocks Residual Fuel Oil Week Ended Feb. 21	Total Stocks Residual Fuel Oil Week Ended Feb. 14
East Coast	1,458	1,419	19,492	19,317	9,053	10,328	7,590	8,586
Appalachian	511	445	3,860	3,814	367	373	609	574
Ind., Ill., Ky.	2,640	2,646	22,258	21,699	3,372	3,653	4,154	4,250
Okla., Kans., Mo.	1,349	1,410	10,146	9,857	977	1,067	2,033	2,101
Inland Texas	889	819	3,575	3,575	137	125	1,201	1,204
Texas Gulf	3,031	3,166	19,914	18,677	7,785	7,817	9,301	9,204
La. Gulf	500	432	4,495	4,727	1,478	1,428	2,207	2,174
N. La., Ark.	258	254	1,115	980	114	89	303	331
Rocky Mt.	340	351	2,339	2,257	292	277	631	618
California	1,595	1,529	17,118	16,893	12,123	12,355	60,870	60,913
TOTAL U. S.—B. of M. Basis	12,571	12,471	104,312*	101,796†	35,698	37,512	88,899	89,955
U. S.—B. of M. Basis Feb. 22, 1941	11,554		94,706		35,325		96,883	

*Finished 95,771,000 bbls.; Unfinished 8,541,000 bbls. †Finished 93,387,000 bbls.; Unfinished 8,409,000 bbls.



N. P. N. Gasoline Index

	Dealer T.W. Cents per Gallon	Tank Car Cents per Gallon
Mar. 2	10.17	6.73
Month ago	10.19	6.73
Year ago	8.60	5.14

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of following wholesale markets for regular-grade gasoline, FOB refineries or terminals: Okla., Mid-Western, W. Penna., Calif., N. Y. Harbor, Philadelphia, Jacksonville, Boston, Gulf Coast.

N. P. N. Refinery Index

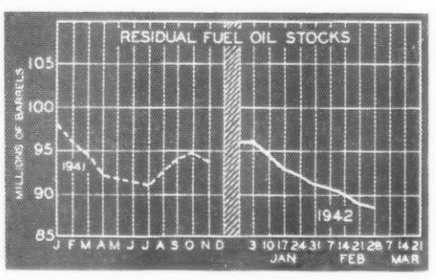
The Refinery Index shown below represents the return in cents per barrel (42 gallons) from refining a barrel of 36 gravity Mid-Continent crude into its various principal products. The index is calculated by subtracting the current price of crude at the well from the average price of refined products sold at current quoted Oklahoma refinery prices.

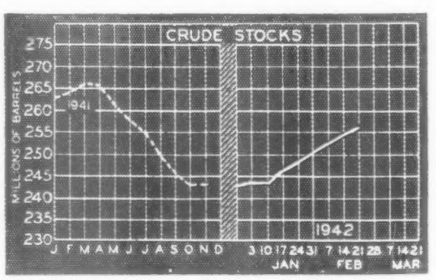
Date	Margin
Mar. 2	65.2
Month ago	70.7
Year ago	45.9

Crude Oil Stocks

(Bureau of Mines figures; thousands of barrels)

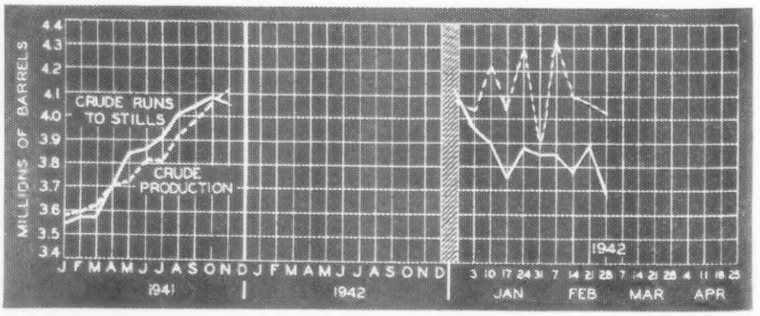
Grade or Origin	Feb. 14	Feb. 21	Change
Pennsylvania Grade	3,530	3,527	— 3
Other Appalachian	1,502	1,472	— 30
Lima-Michigan	1,534	1,538	+ 4
Illinois-Indiana	18,856	18,784	— 72
Arkansas	3,020	3,008	— 12
Kansas	7,911	7,852	— 59
Louisiana:	13,406	12,714	— 692
Northern	3,996	4,011	+ 15
Gulf Coast	9,410	8,703	— 707
Mississippi	3,008	3,074	+ 66
New Mexico	7,350	7,407	+ 57
Oklahoma	50,043	50,126	+ 83
Texas:	87,891	89,979	+2,088
East Texas	21,317	21,638	+ 321
West Texas	20,857	21,438	+ 581
Gulf Texas	25,405	26,276	+ 871
Other Texas	20,312	20,627	+ 315
Rocky Mountain	16,385	16,350	— 35
California	38,091	38,407	+ 316
Foreign	1,936	2,623	— 313
Total U. S. refinable	254,463	255,861	+1,398
Heavy in California	10,609	10,710	+ 101
E. Coast refinery crude	10,575	10,768	+ 193
E. Coast pipe line crude	492	342	— 150
E. Coast refined products	48,560	46,029	—2,531
Total all oils	59,627	57,139	—2,488





Crude Oil Production

	WEEK ENDED Feb. 28 Barrels (Daily Average)	WEEK ENDED Feb. 21 Barrels (Daily Average)		WEEK ENDED Feb. 28 Barrels (Daily Average)	WEEK ENDED Feb. 21 Barrels (Daily Average)
Oklahoma	393,700	396,750	Eastern (Ill. & Ind. excluded)	95,550	95,200
Kansas	230,000	247,100	Michigan	50,850	50,700
Nebraska	4,450	4,450	Wyoming	84,400	86,850
Texas	1,515,450	1,513,800	Montana	21,600	21,700
Louisiana	352,100	353,950	Colorado	5,550	5,700
Arkansas	73,850	73,350	New Mexico	120,400	119,950
Mississippi	90,850	90,550	California	622,850	653,600
Illinois	334,900	346,750	Total U.S.	4,015,650	4,077,350
Indiana	19,150	16,950			



MARKETS

Atlantic Coast

NEW YORK—Pooling of East Coast stocks of light and heavy fuels to take care of jobbers without supplies and limited deliveries by fuel oil suppliers to all customers in an effort to avoid shortage were developments in the East Coast supply situation the past week.

Kerosine supplier who had been quoting 5.4c at Wilmington said his price now was 5.25c, 0.15c reduction having been "compelled" by OPA price orders. New price fell within existing range at Wilmington of 5.25 to 5.5c. Another Wilmington supplier said he now was quoting 9.15c for min. 80 oct. (research) gasoline. Other suppliers at that point quoted min. 80 oct. upward from 7.75c.

Mid-Western

CHICAGO, Feb. 28.—All grades of gasoline were quoted 0.225 to 0.25c lower by some Mid-Western refiners the past week. Group 3 quotations ranged 6.75 to 7.2c for 78 oct. Ethyl; 5.75 to 6.375c for 72-74 oct.; 5.375 to 6c for 63-66 oct; and 5 to 5.625c for 60 oct. & below. Marketers Group 3 quotations ranged 6 to 6.375c; 5 to 5.5c; 4.875 to 5.125c; 4.25 to 4.75c, for the 4 products, respectively.

Open spot sales reported by 4 marketers were: 13 cars 78 oct. Ethyl, 6 cars at 6.375c, and 7 cars at 6.5c; 9 cars 70-72 oct., 6 cars at 5.5c, 2 cars at 5.625c, and 1 car at 5.75c; 8 cars 41-43 kerosine, 5 cars at 3.875c, and 3 cars at 4c; 1 car range oil at 4c; and 3 cars No. 3 fuel at 3.375c, FOB Group 3.

Refiners Group 3 quotations ranged 4.375 to 4.75c for 41-43 kerosine; 4c for range oil; and 3.5 to 3.6c for No. 3 fuel. Marketers Group 3 quotations ranged 3.875 to 4.125c; 3.875 to 4c; and 3.375 to 3.625c for the 3 products, respectively.

Mid-Continent

TULSA, Feb. 28.—Highlighting the past week in Mid-Continent, all grades of gasoline were off 0.25c on the lows of price ranges in Oklahoma and North Texas when many refiners reduced their quotations "to meet competition". Highs of price ranges for most part were unchanged.

Oklahoma refiners' quotations ranged 6.5-7.125c for Ethyl, 5.75-6.375c for 72-74 oct., 5.375-6c for 63-66 oct., and 5-5.625c for 60 oct. & below. North Texas refiners' quotations ranged 6.75-6.875c, 5.75-6.3c, 5.375-6c, and 5-5.5c for the same 4 grades, respectively.

Oklahoma refiner sold 250 cars No. 2 straw fuel to Atlantic Coast distributors at unrevealed prices for shipment within 10 days. Same refiner was unable to supply an inquiry for 100 cars No. 2 straw and an unrevealed quantity of No. 1 p.w., also for East Coast shipment.

California

LOS ANGELES, Feb. 27.—Some independent refiners advanced their quotations for third-grade gasoline to 5c early the past week, but by the end of the week said they would probably have to cut their quotations 0.25c to meet competition.

Fuel oil demand was good. The call for stove oil and kerosine distillate increased. Cold weather required smudging in citrus groves and both products sold at between $1.10 to $1.15 per bbl., as compared with $1.00 before the chill.

Natural gasoline continued in demand with spot prices ranging from 5.25 to 5.375c.

Export prices were unchanged.

Gulf

NEW YORK—Gasoline, kerosine, and No. 2 fuel were offered lower at the Gulf the week ended Feb. 28, but market continued quiet with no cargo inquiries or open spot sales reported. Storage was said to be "getting pretty well filled up." One refiner said he had had to shut down his plant. "We're down until boats arrive," he said.

Unleaded 65 oct. (ASTM) gasoline was offered at 5.75c, down 0.125c, "contingent on transportation".

Kerosine and No. 2 fuel were priced 0.125c lower at 3.875c, and 3.75c, respectively. Quotations ranged to 4.375c for kerosine and to 4c for No. 2 fuel.

Pennsylvania

NEW YORK—Fuel oils were priced higher in lower Western Penna. field and two refiners reported advances in kerosine quotations the last week of February. Demand for both products was heavy, supplies tight. Call from East Coast area added to already good local demand "cleaning everything up", one refiner said. "We've shortened ourselves to help with deliveries to the East," said another.

No. 1 fuel in the lower field was priced 0.125c higher at 5.75 to 5.875c. Other fuels were 0.25c higher, with Nos. 2 and 3 quoted at 5.625 to 5.875c and 36-40 gravity at 5.5 to 5.75c.

In upper field, 45 w.w. kerosine was priced 0.25c higher at 6.25c. One lower refiner reported 0.25c advance to 6.25c in his quotation for same grade, but other lower refiners quoted 45 w.w. at 6.125c.

Index of Governmental Orders Concerning Petroleum Prices

Orders, "requests", "ceilings", and other statements issued by governmental agencies concerning prices of petroleum and products, prices for which are published in this market section of NATIONAL PETROLEUM NEWS, have been published as follows:

	NATIONAL PETROLEUM NEWS	PLATT'S OILGRAM	Platt's OIL-Law-GRAM
Aug. 4, '41—"Ceiling" on Penna. neutral	Aug. 6, pg. 5	Aug. 4, pg. 1	Pg. 17
Aug. 23, '41—Maximum prices for Penna. grade crudes	Aug. 27, pg. 7	Aug. 23, pg. 1	Pg. 17
Aug. 28, '41—Maximum s.s. prices for regular-grade gasoline in 40 Atlantic Coast cities	Sept. 3, pg. 7	Aug. 28, pg. 1	Pg. 22
Sept. 4, '41—"Ceiling" on Gulf Coast Minimum 80 oct. (research) gasoline	Sept. 10, pg. 7	Sept. 5, pg. 1	Pg. 58
Nov. 7, '41—See Jan. 17, '42 below.			
Nov. 10, '41—See Jan. 17, '42 below.			
Nov. 21, '41—Maximum prices for paraffin wax	Nov. 26, pg. 5	Nov. 21, pg. 1	Pg. 66
Nov. 28, '41—See Jan. 17, '42 below.			
Jan. 17, '42—OPA letter restating contents of letters of Nov. 7, 10 and 28, '41; formula for determining maximum prices for all products other than those covered by specific orders.	Jan. 21, pg. 7	Jan. 19, pg. 1	Pg. 135
Jan. 17, '42—Maximum prices for Bunker "C" and No. 6 fuel, East & Gulf Coasts.	Jan. 21, pg. 5	Jan. 20, pg. 1	Pg. 146
Jan. 22, '42—Approval of 0.3c advance in gasoline, Atlantic Coast states	Jan. 28, pg. 7	Jan. 22, pg. 1	Pg. 147
Jan. 28, '42—Amendment No. 1 to paraffin wax price schedule	Feb. 11, pg. 20	Jan. 29, pg. 1	Pg. 153
Feb. 2, '42—OPA Price Schedule No. 88	Feb. 11, pg. 17	Feb. 4, pg. 1	Pg. 159
Feb. 5, '42—Amendment No. 1 to OPA Price Schedule No. 88	Feb. 11, pg. 18	Feb. 9, pg. 1	Pg. 167
Feb. 7, '42—Amendment No. 2 to OPA Price Schedule No. 88	Feb. 11, pg. 18	Feb. 9, pg. 1	Pg. 167
Feb. 17, '42—Amendment No. 4 to OPA Price Schedule No. 88		Feb. 19, pg. 1	Pg. 187

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy, time of transmission or promptness of delivery.

The subscriber receives this information for his private use and not for resale or further distribution.

Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "Inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test: and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads.

Summary of Daily Gasoline Prices (Feb. 24 to Mar. 2)

	Monday Mar. 2	Friday Feb. 27	Thursday Feb. 26	Wednesday Feb. 25	Tuesday Feb. 24
U. S. Motor, (ASTM octane)					
78 octane Ethyl:					
Oklahoma	6.5 – 7.125	6.5 – 7.125	6.5 – 7.125	6.5 – 7.125	6.75 – 7.25
Mid-Western (Group 3 basis)	6.75 – 7.2	6.75 – 7.2	6.75 – 7.3	6.75 – 7.3	6.75 – 7.3
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6.75	6.75 – 6.875	6.75 – 6.875	6.875	6.875 – 7
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6.875 (1)	7 (1)	7 (1)	7 (1)	7 (1)
72-74 octane:					
Oklahoma	5.75 – 6.375	5.75 – 6.375	5.75 – 6.375	5.75 – 6.375	5.875 – 6.375
Mid-Western (Group 3 basis)	5.75 – 6.375	5.75 – 6.375	5.75 – 6.375	5.75 – 6.375	5.875 – 6.375
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.75 – 6.3	5.75 – 6.3	5.75 – 6.3	5.875 – 6.3	5.875 – 6.3
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.875	5.875 – 6.125	6 – 6.125	6 – 6.125	6 – 6.125
63-66 octane:					
Oklahoma	5.375 – 6	5.375 – 6	5.375 – 6	5.375 – 6	5.5 – 6
Mid-Western (Group 3 basis)	5.375 – 6	5.375 – 6	5.375 – 6	5.375 – 6	5.5 – 6
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.375 – 6	5.375 – 6	5.375 – 6	5.5 – 6	5.5 – 6
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.5 (1)	5.5 (1)	5.625 (1)	5.625 (1)	5.625 (1)
60 octane & below:					
Oklahoma	5 – 5.625	5 – 5.625	5 – 5.625	5 – 5.625	5.125 – 5.625
Mid-Western (Group 3 basis)	5 – 5.625	5 – 5.625	5 – 5.625	5 – 5.625	5.125 – 5.625
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5 – 5.5	5 – 5.5	5 – 5.5	5.125 – 5.5	5.125 – 5.5
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.125	5.125 – 5.5	5.25 – 5.5	5.25 – 5.5	5.25 – 5.5
Motor Gasoline, 72-74 octane (ASTM)					
New York harbor	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8
New York harbor, barges	8.2 – 8.8	8.2 – 8.8	8.2 – 8.8	8.2 – 8.8	8.2 – 8.8
Philadelphia district	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8	8.3 – 8.8
Baltimore district	8.05 – 8.8	8.05 – 8.8	8.05 – 8.8	8.05 – 8.8	8.05 – 8.8
Motor Gasoline:					
Western Penna. Bradford-Warren:					
Min. 80 Oct. ('39 Research)	No Price	No Price	No Price	No Price	No Price
74-76 Oct. (ASTM)	No Price	7.75 (1)	7.75 (1)	7.75 (1)	7.75 (1)
74-76 Oct. (L-3)	....	7.5 (1)	7.5 (1)	7.5 (1)	7.5 (1)
"Q" Gasoline, Min. 70 Oct. (ASTM)	7.75 (1)	....	....	....	....
Western Penna. Other Districts:					
Min. 80 Oct. ('39 Research)	No Price	No Price	No Price	No Price	No Price
74-76 Oct. (ASTM)	No Price	7 – 7.3	7 – 7.3	7 – 7.3	7 – 7.3
74-76 Oct. (L-3)	....	7 – 7.3	7 – 7.3	7 – 7.3	7 – 7.3
"Q" Gasoline, Min. 70 Oct. (ASTM)	7 – 7.3	....	....	....	....

REFINERY PRICES

Gasoline—U. S. Motor (ASTM) except where otherwise specified

Prices Effective	Mar. 2	Feb. 23
OKLAHOMA		
78 oct. Ethyl	6.5 – 7.125	6.75 – 7.25
72-74 oct.	5.75 – 6.375	5.875 – 6.375
63-66 oct.	5.375 – 6	5.5 – 6
60 oct. & below	5 – 5.625	5.125 – 5.625
60-62 400 e.p.	5.125 (1)	5.25 (1)
MID-WESTERN (Group 3 basis)		
78 oct. Ethyl	6.75 – 7.2	6.75 – 7.3
72-74 oct.	5.75 – 6.375	5.875 – 6.375
63-66 oct.	5.375 – 6	5.5 – 6
60 oct. & below	5 – 5.625	5.125 – 5.625
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
78 oct. Ethyl	6.75	6.875 – 7
72-74 oct.	5.75 – 6.3	5.875 – 6.3
63-66 oct.	5.375 – 6	5.5 – 6
60 oct. & below	5 – 5.5	5.125 – 5.5
60-62, 400 e.p.	5.25 (1)	5.5 (1)
W. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
78 oct. Ethyl	6.875 (1)	7 (1)
72-74 oct.	5.875	6 – 6.125
63-66 oct.	5.5 (1)	5.75 (1)
60 oct. & below	5.125	5.25 – 5.5
CENT. W. TEX. (Prices to truck transports)		
80 oct. & above	7 (2)	7.375 (2)
72-74 oct.	6 (2)	6.125 (2)
67-69 oct.	5.5 (1)	5.625 (1)
62 oct. & below	5.25 (2)	5.375 (2)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
60 oct. & below	No Price	No Price
60-62, 400 e.p.	No Price	No Price
KANSAS (For Kansas destinations only)		
78 oct. Ethyl	7.375 (1)	7.375 (1)
72-74 oct.	6.2-6.375 (2)	6.3-6.375 (2)
63-66 oct.	5.8 – 6 (2)	6 (1)
60 oct. & below	5.4-5.625 (2)	5.5-5.625 (2)

Prices Effective	Mar. 2	Feb. 23
ARK. (For shipment to Ark. & La.)		
70-72 oct.	5.75 (1)	6 (1)
60 oct. & below	5.25 (1)	5.5 (1)
WESTERN PENNA. (Motor gasoline)		
Bradford-Warren:		
Min. 80 oct. ('39 research)	No Price	No Price
74-76 oct. (ASTM)	No Price	7.75 (1)
74-76 oct. (L-3)	....	7.5 (1)
"Q" Gasoline, Min. 70 Oct. (ASTM)	7.75 (1)	....
Other districts:		
Min. 80 oct. ('39 research)	No Price	No Price
74-76 oct. (ASTM)	No Price	7 – 7.3
74-76 oct. (L-3)	....	7 – 7.3
"Q" Gasoline, Min. 70 Oct. (ASTM)	7 – 7.3	....
CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group)		
U.S. Motor: (Oct. ASTM):		
72-74 oct.	8 – 8.5	8 – 8.5
67-69 oct.	7.5 – 7.75	7.5 – 7.75
Str. run gasoline, excluding Detroit shpt.	4.75 – 6	4.75 – 6
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	8.375	8.375
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	5.75 – 8	5.25 – 8
54-58 grav., for outside state shipment	4.75 – 7	4.75 – 7
54-58 grav., for instate shipment	4.75 – 7	4.75 – 7

Kerosine, Gas & Fuel Oils

Prices Effective	Mar. 2	Feb. 23
OKLAHOMA		
41-43 grav. w.w.	4.375 – 4.75	4.375 – 4.75
42-44 grav. w.w.	4.5 – 4.625	4.5 – 4.625
Range Oil	4 – 4.375	4 – 4.375
No. 1 P.W.	3.875 – 4.25	3.875 – 4.25
No. 1 straw	3.5 – 4	3.5 – 4
No. 2 straw	3.6 – 4.125	3.6 – 4.125
No. 3 fuel	3.5	3.5
U.G.I. Gas Oil	3.625 (1)	3.625 (1)
No. 6 fuel	$0.85-$0.90 (2)	$0.85-$0.90 (2)
14-16 fuel	$0.95 (1)	$0.95 (1)
MID-WESTERN (Group 3 basis)		
41-43 grav. w.w.	4.375 – 4.75	4.375 – 4.75
42-44 grav. w.w.	4.5 (2)	4.5 (2)
Range Oil	4 (1)	4 (1)
No. 1 p.w.	3.875 – 4.125	3.875 – 4.125
No. 2 straw	3.6 – 3.8	3.6 – 3.8
No. 3	3.5 – 3.6	3.5 – 3.6
No. 5	$0.85 (1)	$0.85 (1)
No. 6	$0.85 (2)	$0.85 (2)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
41-43 grav. w.w.	4.25 – 4.75	4.25 – 4.75
No. 1 P.W.	4.2 (2)	4.2 (2)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
41-43 grav. w.w.	No Price	No Price
No. 1 straw	4.3 (1)	4.3 (1)
KANSAS (For Kansas destinations only)		
41-43 grav. w.w.	No Price	No Price
42-44 gravity w.w.	4.8-4.875 (2)	4.8-4.875 (2)
No. 1 p.w.	4.2-4.25 (2)	4.2-4.25 (2)
No. 6 fuel	$0.90 (1)	$0.90 (1)

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads.

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	Mar. 2	Feb. 23
ARK. (For shipment to Ark. and La.)		
41-43 grav. w.w.	4.625 (1)	4.625 (1)
No. 1	4 (1)	4 (1)
No. 2	3.5 (1)	3.5 (1)
No. 3 fuel	3.5 (1)	3.5 (1)
Tractor fuel, for shpt. to Ark. points only	5.125 (1)	5.125 (1)
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	6.25	6.25
46 grav. w.w.	6.375 (1)	6.375 (1)
No. 1 fuel	6.125– 6.25	6.125– 6.25
No. 2 "	6.125– 6.25	6.125– 6.25
No. 3 "	6.25 (2)	6.25 (2)
36-40 gravity	6.25 (1)	6.25 (1)
Other districts:		
45 grav. w.w.	6.125– 6.25	6.125
46 grav. w.w.	6.125– 6.25	6.125– 6.25
47 grav. w.w.	6.25 – 6.375	6.25 – 6.375
No. 1 fuel	5.75 – 5.875	5.625– 5.875
No. 2 "	5.625– 5.875	5.375– 5.875
No. 3 "	5.625– 5.875	5.375– 5.875
36-40 grav., Pittsburgh dist. prices excluded	5.5 – 5.75	5.25 – 5.875

CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group.)

47-49 gravity w.w.	5.6 – 6	5.6 – 6
P.W. Distillate	5.5 – 6	5.5 – 6
No. 3 gas oil, Straw	5 – 5.625	5 – 5.625
U.G.I. gas oil	4.5–4.875 (2)	4.5–4.875 (2)
Fuel Oils (Vis. at 100).		
300-500 Vis.	4 –4.25 (2)	4 –4.25 (2)
100-300 Vis.	4.5 (1)	4.5 (1)

OHIO (S. O. Ohio quotations for statewide delivery)

Kerosine	7	7

CALIFORNIA

40-43 grav. w.w.	4.5 – 6	4.5 – 6
San Joaquin Valley:		
Heavy fuel	$0.75 –$0.85	$0.75 –$0.85
Light fuel	$0.75 –$0.85	$0.75 –$0.85
Diesel fuel	2.75 – 4	2.75 – 4
Stove dist.	2.75 – 4	2.625– 4
Los Angeles:		
Heavy fuel	$0.75 –$0.85	$0.75 –$0.85
Light fuel	$0.75 –$0.85	$0.75 –$0.85
Diesel fuel	2.75 – 4	2.75 – 4
Stove dist.	2.75 – 4	2.625– 4
San Francisco:		
Heavy fuel	$0.85	$0.85
Light fuel	$0.95	$0.95
Diesel fuel	4.5	4.5
Stove dist.	5.5	5.5

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Lubricating Oils

WESTERN PENNA.

Prices are for sales made, or offers reliably reported, to jobbers & compounders only.

Viscous Neutrals—No. 3 col. Vis. at 70° F.

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	40.5 (1)	40.5 (1)
10 p.t.	39.5 (1)	39.5 (1)
15 p.t.	38.5 (1)	38.5 (1)
25 p.t.	33	33
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	38.5 (1)	38.5 (1)
10 p.t.	37.5 (1)	37.5 (1)
15 p.t.	36.5 (1)	36.5 (1)
25 p.t.	31	31
Cylinder Stocks		
Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.		
10 p.t.	30.5 (1)	30.5 (1)
15 p.t.	29.5 (1)	29.5 (1)
25 p.t.	25	25
600 S.R. filterable	15	15
650 S.R.	15.5	15.5
600 fl.	16	16
630 fl.	17	17

MID-CONTINENT (F. o. b. Tulsa)

Neutral Oils (Vis. at 100° F. 0 to 10 P.P.)

Pale Oils:

Vis. Color		
60-85—No. 2	8 – 8.5	8 – 8.5
86-110—No. 2	8.5 – 8.75	8.5 – 8.75
150—No. 3	14.5	14.5
180—No. 3	15	15
200—No. 3	15	15–15.5
250—No. 3	16.5	16.5
280—No. 3	17–17.5	17–17.5
300—No. 3	18	18–18.5

Lubricating Oils (Cont'd)

Prices Effective	Mar. 2	Feb. 23
Red Oils:		
180—No. 5	15 (1)	15 (1)
200—No. 5	15 (1)	15 (1)
280—No. 5	No Price	No Price
300—No. 5	17.5 (2)	17.5 (2)

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stock—Vis. at 210°		
200 Vis. D	27 (1)	27 (1)
150-160 Vis. D:		
0 to 10 p.p.	23	23–23.5
10 to 25 p.p.	22.5–23	22.5–23
25 to 40 p.p.	23 (1)	23 (1)
150-160 Vis. E	22 (2)	22 (2)
120 Vis. D:		
0 to 10 p.p.	22 (2)	22 (2)
600 S.R. Dark Green	9.5 (1)	9.5 (1)
600 S.R. Olive Green	10.5–11	10.5–11
631 S.R.	18.5 (1)	18.5 (1)
Black Oil	5.5 (1)	5.5 (1)

SOUTH TEXAS Neutral Oils

Vis. Color		
Pale Oils: (*Vis. at 100° F.*)		
100 No. 1½-2½	6.5	6.5
200 No. 2-3	8.75	8.75
300 No. 2-3	9.25	9.25
500 No. 2½-3½	10	10
750 No. 3-4	10.25	10.25
1200 No. 3-4	10.375	10.375
2000 No. 4	10.5	10.5
Red Oils:		
100 No. 5-6	6.5 (2)	6.5 (2)
200 No. 5-6	8.75	8.75
300 No. 5-6	9.25	9.25
500 No. 5-6	10	10
750 No. 5-6	10.25	10.25
1200 No. 5-6	10.375	10.375
2000 No. 5-6	10.5–11.5	10.5–11.5

CHICAGO (From Mid-Continent p.l. crude.)

Neutral oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils

Vis. Color		
60-85—No. 2	9.5 (1)	9.5 (1)
86-110—No. 2	10 (1)	10 (1)
150—No. 3	15.5 (1)	15.5 (1)
180—No. 3	16 (1)	16 (1)
200—No. 3	16 (1)	16 (1)
250—No. 3	17 (1)	17 (1)
Red Oils:		
180—No. 5	16 (1)	16 (1)
200—No. 5	16 (1)	16 (1)
250—No. 5	17 (1)	17 (1)
280—No. 5	18 (1)	18 (1)
300—No. 5	18.5 (1)	18.5 (1)

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)		
140	11.5 (1)	11.5 (1)
160	12.5 (1)	12.5 (1)
200	13.5 (1)	13.5 (1)
Bright stocks, 160 vis. at 210 No. 8 color:		
0 to 10 p.p.	24 (1)	24 (1)
15 to 25 p.p.	23.5 (1)	23.5 (1)
30 to 40 p.p.	21.5 (1)	21.5 (1)
Filtered Cyl. Stock	15.5 (1)	15.5 (1)

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3		
Grade 26-70	2.25 (Sales)	2.25 (Sales)
FOB BRECKENRIDGE		
Grade 26-70	2 (Qtns.)	2 (Qtns.)
CALIFORNIA (FOB plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	4.75 – 5.5	4.75 – 5.5

Naphtha and Solvent

Prices Effective	Mar. 2	Feb. 23
(FOB Group 3)		
Stoddard solvent	6.625	6.625
Cleaners' naphtha	7.125	7.125
V. M. & P. naphtha	7.125	7.125
Mineral spirits	6.125	6.125
Rubber solvent	7.125	7.125
Lacquer diluent	7.375– 8.125	7.375– 8.125
Benzol Diluent	7.875– 8.625	7.875– 8.625
WESTERN PENNA.		
Untreated naphtha	7 (2)	7 (2)
Stoddard solvent	7 – 7.5	7 – 7.5

OHIO (S. O. Ohio quotations for statewide delivery): V.M.&P. naphtha, D.C. naphtha, Varnolene & Sohio solvent

	10	10
Rubber solvent	9	9

Wax

White Crude Scale:

WESTERN PENNA. (Bbls. C.L.)		
122-124 A.m.p.	4.25	4.25
124-126 A.m.p.	4.25	4.25

OKLAHOMA (C.L., FOB Refinery)

Semi-refined:

128 AMP min., white, 50 kilo bags	No Price	No Price
132-134 AMP, bbls.	5.25 (1)	5.25 (1)

CHICAGO (FOB Chicago district refinery of one refiner, in bags, carloads. Carloads, slabs loose 0.4c less. Melting points are EMP (ASTM) methods; add 3° to convert into AMP.)

Fully refined:		
122-124 (bags only)	5.6	5.6
125-127	6	6
127-129	6.25	6.25
130-132	6.55	6.55
132-134	6.8	6.8
135-137	7.55	7.55

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)		
Snow White	6.125– 7.25	6.125– 7.25
Lily White	5.375– 6.125	5.375– 6.125
Cream White	4.375– 5.375	4.375– 5.375
Light Amber	3.375– 3.875	3.375– 3.875
Amber	3.125– 3.625	3.125– 3.625
Red	3 – 3.5	3 – 3.5

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline Kerosine Cents per Cwt.	Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Cents per gal. 7.4 lbs.
Chicago, Ill.	36	2.376	32	2.368
Decatur, Ill.	32	2.112	31	2.294
Joliet, Ill.	36	2.376	32	2.368
Peoria, Ill.	33	2.178	31	2.294
Quincy, Ill.	31	2.046	29	2.146
Indianapolis, Ind.	38	2.508	39	2.886
Evansville, Ind.	35	2.310	37	2.738
South Bend, Ind	44	2.904	**42	**3.108
Detroit, Mich.	64	4.224	51	3.774
Grand Rapids, Mich.	55	3.630	**50	**3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	41	2.706	41	3.034
Milwaukee, Wis.	39	2.574	34.5	2.553
LaCrosse, Wis.	37	2.442	37	2.738
Minneapolis-St. Paul.	37	2.442	37	2.738
Duluth, Minn.	41	2.706	41.5	3.071
Mankato, Minn.	37	2.442	37	2.738
Des Moines, Ia.	29	1.914	29	2.146
Davenport, Ia.	33	2.178	31	2.294
Mason City, Ia.	34	2.244	33.5	2.479
St. Louis, Mo.	29	1.914	26.5	1.961
Kansas City, Mo.	22	1.452	22.5	1.665
St. Joseph, Mo.	25	1.650	22.5	1.665
Fargo, N. D.	51	3.366	50.5	3.737
Huron, S. D.	43	2.828	42.5	3.145
Wichita				
From Ponca City	7.5	*0.495	7.5	†0.555
From Tulsa	12.5	*0.825	12.5	†0.925
From Cushing	11	*0.726	11	†0.814

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators FOB their terminals)—Prices Effective Mar. 2

MOTOR GASOLINE

District:	Min. 80 Oct. '39 Research (Max. 2 cc. Lead)	72-74 Oct. (ASTM)	68-70 Oct. (ASTM)
N. Y. Harb.	8.8 – 9.3	8.3 – 8.8	8.3 (1)
N. Y. Harb., barges	8.8 (2)	8.2 – 8.8	8.2 (1)
Albany	8.4 (2)	8.4–9.1 (2)	....
Philadelphia	8.55 – 9	8.3 – 8.8	8.3 –8.5 (1)
Baltimore	8.05 (2)	8.05 –8.8	7.95 (1)
Norfolk	7.75 – 8.2	7.8–8.3 (2)	7.6–7.9 (2)
Wilmington, N.C.	7.75 – 9.15	7.85–7.9 (2)	7.375– 7.9
Charleston	7.9 – 8.2	7.9 (1)	7.2 (1)
Savannah	7.87 – 8.2	8 (1)	7.6 –7.8 (2)
Jacksonville	7.87 – 8.2	7.875– 8	7.6–7.875 (2)
Miami	7.87 –8.2 (2)	....	7.875 (1)
Tampa	7.75 – 8.2	7.875–8 (2)	....
Pensacola	7.5 –7.7 (1)	....	7.1 –7.3 (1)
Mobile	7.37 – 7.7	7.5 (1)	7.1 –7.3 (2)
New Orleans	6.75–7.37 (2)	6.25 – 7.25	....
Portland	8.6 – 8.9	8.6 – 8.9	....
Boston	8.5 – 8.8	8.5 – 8.8	8.8 (1)
Providence	8.5 – 8.8	8.5 – 8.8	....

FUEL OILS

	KEROSINE and/or NO. 1 FUEL	No. 2	No. 3	No. 5	No. 6
N. Y. Harb.	5.3	5.2	5.2	$1.65–$1.80 (a)	$1.35
N. Y. Harb., barges	5.2	5.1	....	....	....
Albany	5.6	5.4	5.4	$1.95 (1)	$1.55 (1)
Philadelphia	5.4 – 5.8	5.2	5.2	$1.68	$1.35
Baltimore	5.4	5.2	5.2	$1.68 (1)	$1.35
Norfolk	5.3 – 5.5	5.2	5.2 (2)	....	$1.35 (2)
Wilmington, N.C.	5.25 – 5.5	5.2	....	....	....
Charleston	5.4 – 5.5	5.2 (2)	....	....	$1.30 (2)
Savannah	5.25 – 5.5	....	....	....	$1.30 (1)
Jacksonville	5.25 – 5.5	4.75 (2)	4.75 (1)	....	$1.30 (1)
Miami	5.25–5.5 (2)	....	....	....	....
Tampa	5.25 – 5.5	4.75 (2)	....	....	$1.25 (1)
Pensacola	4.8 – 5 (1)	....	....	....	....
Mobile	4.75 – 5	....	....	....	....
New Orleans	4.25 – 4.875	3.75 –3.875 (2)	....	$1.25 (1)	$0.85 (2)
Portland	5.5	5.3	5.3 (2)	$1.95 (1)	$1.35 (2)
Boston	5.4	5.2	5.2 (2)	$1.65 (2)	$1.35
Providence	5.4	5.2	5.2	$1.60 –$1.65	$1.35

(a) This price is for a straight-run, low pour test No. 5 fuel.

	Bunker C Fuel Ships' bunkers (Ex Lighterage)	Diesel Oil Ships' bunkers (Ex Lighterage)	Diesel Oil Shore Plants	Gas House Gas Oil 28-34 Gravity
N. Y. Harbor	$1.35	$2.15	5.2 –5.3 (2)	5.3 (2)
Albany	$1.55 (1)	$2.35 (1)	5.4 (2)	5.6 (1)
Philadelphia	$1.35	$2.15	....	....
Baltimore	$1.35	$2.15	5.2 (1)	5.2 (1)
Norfolk	$1.35	$2.15	5.2 (1)	5.2 (1)
Charleston	$1.30	$2.15 (2)	5.2 (1)	5.2 (1)
Savannah	$1.30 (1)	$1.99 (1)	....	....
Jacksonville	$1.30 (2)	$1.99-$1.995 (2)	....	....
Tampa	$1.25 (2)	$1.99-$1.995 (2)	....	....
New Orleans	$0.85	$1.55–$1.65 (2)	4 (1)	4 (1)
Portland	$1.35 (2)	$2.25 (2)	5.3 (1)	5.4 (1)
Boston	$1.35	$2.15	5.2 (2)	5.3 (2)
Providence	$1.35	$2.15 (2)	5.2 (1)	5.3 (1)

Wax

(Melting points are AMP, 3° higher than EMP. Export prices FAS c.l. Domestic prices FOB, in bags, c.l. Scale solid; fully refined slabs.)

Prices Effective Mar. 2

Crude Scale:	New Orleans Export	N. Y. Domestic	N. Y. Export
124-6 Yellow	4.65 (1)	....	4.65 (1)
122-4 White	....	No Price	No Price
124-6 White	4.65 (1)	No Price	4.65 (1)
Fully Refined:			
123-5	5.6 (1)	5.6 (1&a)	5.6 (1)
125-7	5.6 (1)	5.6 (1&a)	5.6 (1)
128-30	6 (1)	6 (2)	6 (1)
130-32	6.25 (1)	6.25 (1)	6.25 (1)
133-5	6.55 (1)	6.55 (2)	6.55 (1)
135-7	6.8 (1)	6.8 (1)	6.8 (1)
108-11 White Match wax (tight bbls.)		..... No Price	

(a) 0.4c discount generally given for slabs loose.

Naphtha

Prices Effective Mar. 2

	V.M.&P. Naphtha	Mineral Spirits
Baltimore	10-10.5 (2)	9 – 9.5
New York Harbor	10.5 (2)	9.5
Philadelphia district	10.5 (2)	9.5
Boston	11 (2)	10
Providence	11 (1)	10 (2)

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	Mar. 2	Feb. 23
375 e.p. blend, 70 oct.	6.375– 6.5	6.375– 6.5
390 e.p. blend, 68 oct.	6.25 – 6.375	6.25 – 6.375
390 e.p. blend, 66 oct.	5.875– 6	5.875– 6
400 e.p. blend, 65 oct. min.	5.875– 6	5.875– 6
U. S. Motor, under 65 octane	5.625	5.625
38-40 grav. w.w. kero., 150 fire point	4.5 – 5	4.5 – 5
41-43 grav., w.w. kero.	4.75 – 5	4.75 – 5
44-grav. w.w. kero.	5 – 5.5	5 – 5.5
Diesel fuel, 24 & above	$1.25 –$1.35	$1.25 –$1.30
Diesel fuel, under 24	$1.15 –$1.25	$1.15 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.25 –$1.35
Grade C fuel, Pac. Spec. 400	$0.85 –$0.90	$0.85 –$0.90
In Ship's Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.85 –$0.90	$0.85 –$0.90*

*This price correct for Feb. 23; published incorrectly in NPN of Feb. 25.

Cased Goods: (Per case)

375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.50 –$1.60
400 e.p. blend, under 65 oct.	$1.40 –$1.50	$1.40 –$1.50
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
40-43 grav. w.w. kero., 150 fire point	$1.30 –$1.40	$1.30 –$1.40
Kero., p.w.	$1.25 –$1.35	$1.25 –$1.35

Tanker Rates

(Approximate last paid rates, cents per bbl; Gulf-N. Atlantic, not East of N. Y.)

Hvy. Crude & Fuel (10 to 19.9 gravity)	48
Light Crude, (30 grav. or Lighter)	43
Gasoline	40
Kerosine	40
No. 2 Fuel	42

Note: 37½% surcharge permitted on above rates by Maritime Commission "to cover increased wartime operating expenses."

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf, for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

Prices Effective Mar. 2

Domestic

Motor Gasoline	
Min. 80 oct. '39 Research, max. 2cc lead	6.25 – 6.5
60-62 Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	5.75 – 6.25
70 oct. unleaded "	5.75 – 5.875
68 oct. " "	5.75 – 6.25
65 oct. " "	5.25 – 5.75
60 oct. " "	5
41-43 w.w. kerosine	3.875– 4.375
No. 2 fuel	3.75 – 4
Gas Oil—Less than ½ of 1% sulfur.	
Below 43 diesel index	No Price
43-47 " "	No Price
48-52 " "	No Price
53-57 " "	No Price
58 & above diesel index	No Price
Diesel Oil, ship's bunkers (ex-lighterage)	$1.55 –$1.80
Bunker C, " " "	$0.85 –$0.95
Bunker C, cargoes	$0.85

Export

Motor Gasoline	
60-62 Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	5.75 – 6.25
70 oct. unleaded "	5.75 – 5.875
68 oct. " "	5.75 – 6.25
65 oct. " "	5.25 – 5.75
60 oct. " "	5
41-43 w.w. kerosine	3.875– 4.375
Gas Oil—Less than ½ of 1% sulfur.	
Below 43 diesel index	No Price
43-47 " "	No Price
48-52 " "	No Price
53-57 " "	No Price
58 & above diesel index	No Price

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk, FOB terminals)

Mar. 2

	Steel Drums	Bulk
200 vis. D 210 brt. stock	34–35 (2)	28.8 (2)
150 vis. D 210 brt. stock 0-10 p.p.	30–31 (2)	24.8 (2)
10-25 p.p.	29.5 (1)	24.3 (1)
100 vis. D 210 brt. stock 0-10 p.p.	29.5 (1)	24.3 (1)
10-25 p.p.	29 (1)	23.8 (1)
200 vis. No. 3 col. neutral: 0-10 p.p.	22 (1)	16.8 (1)

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk. exprt. shp., FOB terminals)

Unfiltered Pale Oils: Vis.	Color	Mar. 2	Feb. 23
100	No. 3	6.25 (1)	6.25–6.5 (2)
200	No. 3	7.75 (1)	7.75–8.75 (2)
300	No. 3	8.25 (1)	8.25–9.25 (2)
500	No. 3½	9.25 (1)	9.25–10.25 (2)
750	No. 4	9.75 (1)	9.75–11 (2)
1200	No. 4	10.25 (1)	10.25–11.5 (2)
2000	No. 4	....	12.5 (1)
Red Oils:			
100	No. 5-6	....	6.5 (1)
200	No. 5-6	7.75 (1)	7.75–8.75 (2)
300	No. 5-6	8.25 (1)	8.25–9.25 (2)
500	No. 5-6	9.25 (1)	9.25–10.25 (2)
750	No. 5-6	9.75 (1)	9.75–11 (2)
1200	No. 5-6	10.25 (1)	10.25–11.5 (2)
2000	No. 5-6	11 (1)	11–12.5 (2)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include* 1.5c *federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine taxes also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Mar.* 2, 1942 *as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Wagon	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	9.3	9.8	4.5	7.9
*Newark, N. J.	9.3	9.8	4.5	7.9
Annapolis, Md.	9.65	10.15	5.5	9.7
Baltimore, Md.	9.05	9.55	5.5	8.7
Cumberland, Md.	10.45	10.95	5.5	10.2
Washington, D. C.	9.3	9.8	4.5	9.2
Danville, Va.	10.75	11.25	6.5	10.45
Norfolk, Va.	9.55	10.05	6.5	10.2
Petersburg, Va.	9.85	10.35	6.5	11.2
Richmond, Va.	9.85	10.35	6.5	11.2
Roanoke, Va.	11.05	11.55	6.5	10.7
Charleston, W. Va.	11.35	11.85	6.5	11.5
Parkersburg, W. Va.	10.65	11.15	6.5	11.2
Wheeling, W. Va.	10.65	11.15	6.5	11.8
Charlotte, N. C.	11.2	11.7	7.5	9.5
Hickory, N. C.	11.75	12.25	7.5	10.5
Mt. Airy, N. C.	11.6	12.1	7.5	9.7
Raleigh, N. C.	10.95	11.45	7.5	10.5
Salisbury, N. C.	11.25	11.75	7.5	10.9
Charleston, S. C.	10.05	10.55	7.5	....
Columbia, S. C.	10.9	11.4	7.5	....
Spartanburg, S. C.	11.6	12.1	7.5	....

	Mineral Spirits T.W.	V.M.&P. T.W.
Newark, N. J.	12.5	14
Baltimore, Md.	15	..
Washington, D. C.	15	..

Fuel Oils—T.W.	No. 1	No. 2	No. 3
Atlantic City, N. J.	7.9	7.2	7.2
Newark	7.9	7.2	7.2
Annapolis, Md.	...	7.45	...
Baltimore	7.7	7.2	7.2
Washington, D. C.	8.2	7.6	7.6
Norfolk, Va.	7.9	7	7
Petersburg	8.2	7.2	...
Richmond	8.2	7.2	7.2
Charlotte, N. C.	8.5	8.6	...
Hickory	...	8.2	...
Raleigh	9.5	8.3	...
Charleston, S. C.	...	7.2	...
Columbia	...	8.2	...
Spartanburg	...	9	...

*Effective Jan. 23, '42, minimum retail resale price of 13.3c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w.

Kerosine—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price; Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)

	Com. Cons. T.W.	Undiv. Dlr. T.W.	Gasoline Taxes
New York City			
Manhattan & Bronx	9.2	9.7	*5.5
Kings & Queens	9.2	9.7	*5.5
Richmond	8.8	9.3	*5.5
Albany, N. Y.	9	9.5	5.5
Binghamton, N. Y.	10.1	10.6	5.5
Buffalo, N. Y.	9.3	9.8	5.5
Jamestown, N. Y.	9.5	10	5.5
Mt. Vernon, N. Y.	9.2	9.7	5.5
Plattsburg, N. Y.	10.1	10.6	5.5
Rochester, N. Y.	9.9	10.4	5.5
Syracuse, N. Y.	9.6	10.1	5.5
Bridgeport, Conn.	9.1	9.6	4.5
Danbury, Conn.	9.6	10.1	4.5
Hartford, Conn.	9.7	10.2	4.5
New Haven, Conn.	9.1	9.6	4.5
Bangor, Me.	9.8	9.5	5.5
Portland, Me.	9.4	9.9	5.5
Boston, Mass.	9	9.5	4.5
Concord, N. H.	10.5	11	5.5
Lancaster, N. H.	11.1	11.6	5.5
Manchester, N. H.	10.4	10.9	5.5
Providence, R. I.	9.1	9.6	4.5
Burlington, Vt.	10	10.5	5.5
Rutland, Vt.	10.1	10.6	5.5

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y.	11.9	13.1
New York City	10.5	11.5
Rochester, N. Y.	12.7	13.9
Syracuse, N. Y.	13.5	....
Boston, Mass.	11.5	12.5
Bridgeport, Conn.	†15.8	†16.8
Hartford, Conn.	†15.8	†16.8
Providence, R. I.	12.5	13.5

	Kerosine Yard	Kerosine TW	Mobilfuel Diesel TC	Mobilfuel Diesel TW	Mobilheat Fuel Yard	Mobilheat Fuel TW
New York:						
Manhat'n & Bronx	5.6	8	...	7.5	5.5	7.2
Kings & Queens	5.6	8	...	7.5	5.5	7.2
Richmond	5.5	8			5.4	7
Albany	5.8	7.8	5.6	7.6	5.6	7.3
Binghamton	7.1	9.1	...	8.9	6.9	8.4
Buffalo	6.8	8.8	6.7	8.7	6.7	8.2
Jamestown	6.9	8.9	...	8.8	6.8	8.2
Mt. Vernon	5.7	8.2	...	7.6	5.6	7.2
Plattsburg	6.3	8.3	...	8.1	6.1	7.6
Rochester	6.9	8.9	6.4	8.4	6.4	7.9
Syracuse	6.7	8.7	6.3	8.3	6.3	7.8
Conn.:						
Bridgeport	5.8	...	...	...	5.7	7
Danbury	6.3	...	...	...	6	7
Hartford	5.8	...	...	7.7	5.7	7.2
New Haven	5.6	...	...	7.5	5.5	7.1
Maine:						
Bangor	6.1	8.1	5.9	7.9	5.9	7.4
Portland	5.7	8.1	5.5	7.5	5.5	7.2
Mass.:						
Boston	5.8	8	5.4	7.4	5.6	7.2
N. H.:						
Concord	6.6	8.6	...	...	6.7	8.2
Lancaster	7.7	9.7	...	...	7.7	9.2
Manchester	6.7	9	...	...	6.4	7.9
R. I.:						
Providence	5.8	7.8	5.4	7.4	5.6	7.1
Vermont:						
Burlington	6.3	...	6.1	8.1	6.1	7.6
Rutland	6.5	...	...	8.2	6.2	7.7

*Does not include 1% city sales tax applicable to price of gasoline (ex tax).

†In steel barrels.

Discounts: Diesel—On t.w. deliveries, 0.5c for at least 400 gals.; 1c for full tank truck.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial T.W	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	9.3	9.8	5.5	10.15
Pittsburgh	9.8	10.3	5.5	10.5
Allentown	9.8	10.3	5.5	10.5
Erie	9.8	10.3	5.5	10.5
Scranton	9.8	10.3	5.5	10.5
Altoona	9.8	10.3	5.5	10.5
Emporium	9.8	10.3	5.5	10.5
Indiana	9.8	10.3	5.5	10.5
Uniontown	9.8	10.3	5.5	10.5
Harrisburg	9.8	10.3	5.5	10.5
Williamsport	9.8	10.3	5.5	10.5
Dover, Del	...	10.3	5.5	10.5
Wilmington, Del	...	9.8	5.5	10
Boston, Mass.	...	10	4.5	8
Springfield, Mass.	...	10.9	4.5	8.9
Worcester, Mass.	...	10.6	4.5	8.5
Fall River, Mass.	...	10.1	4.5	9
Hartford, Conn.	...	10.7	4.5	7.9
New Haven, Conn.	...	10.1	4.5	9
Providence, R. I.	...	10.1	4.5	8.6
Atlantic City, N. J.	...	9.8	4.5	7.9
Camden, N. J.	...	9.8	4.5	7.9
Trenton, N. J.	...	9.8	4.5	7.9
Annapolis, Md.	...	10.15	5.5	8.7
Baltimore, Md.	...	9.55	5.5	7.7
Hagerstown, Md.	...	10.65	5.5	8.2
Richmond, Va.	...	10.35	6.5	10.2
Wilmington, N. C.	...	10.65	7.5	9.8
Brunswick, Ga.	...	10	7.5	*9
Jacksonville, Fla.	...	9	8.5	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa.	10.5	12
Lancaster, Pa.	11.5	13
Pittsburgh, Pa.	12.5	12.5

Fuel Oils—T.W.	1	2	3	5	6
Phila., Pa.	8	7.2	7.2	4.75	3.75
Allentown, Pa.	8.5	7.5	7.5	....	....
Wilmington, Del.	8	7.2	7.2	....	....
Springfield, Mass.	8.9	7.6	7.6	....	....
Worcester, Mass.	8.5	7.5	7.5	....	....
Hartford, Conn.	7.9	7.2	7.2	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio††

***Sohio X-70 Gasoline (*Regular Grade*)**

	Consumer T.W.	**Resellers	‡S.S.	Gasoline Taxes	†Kerosine T.W.
Ohio, Statewide	12	10	13.5	5.5	9
Akron	12	9.5	12	5.5	9
Cincinnati	12	9.5	12.5	5.5	9
Cleveland	12	9.5	12.5	5.5	9
Columbus	12	9.5	12.5	5.5	9
Dayton	12	9.5	12.5	5.5	9
Marietta	12	9.5	12.5	5.5	9
Portsmouth	12	9.5	12.5	5.5	9
Toledo	12	9.5	12.5	5.5	9
Youngstown	12	9.5	12.5	5.5	9

Aviation Gasoline—Statewide

	Consumer T.W.	Gasoline Taxes
Sohio Aviation	14.5	5.5
Esso Ethyl Aviation 74 Oct.	15.5	5.5
Esso Ethyl Aviation 80 Oct.	16.5	5.5
Esso Ethyl Aviation 91 Oct.	17.5	5.5
Esso Ethyl Aviation 100 Oct.	24.5	5.5

	†Naphtha—T.W. Statewide	Lucas County
S. R. Solvent	13.5	13.5
D. C. Naphtha	14.5	14.25
V.M.&P. Naphtha	14.5	14.25
Varnolene	14.5	14.25
Sohio Solvent	14.5	14.25

Fuel Oils—T.W.	No. 1	No. 2	No. 3	No. 4
Ohio, Statewide	8	8	7.5	....
Cleveland	10	10	9.5	7.25

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

**Except authorized agents.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1.5c federal & 4c state tax.

‡Prices at company-operated stations.

††Statewide prices are subject to exceptions other than those shown.

Discounts:

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Fuel oils—Statewide prices are for t.w. & drum deliveries of 50 gals. or more; prices for deliveries of less than 50 gals. are 0.5c higher. Cleveland Nos. 1, 2, and 3 prices are for bulk deliveries of 5 to 99 gals.; 100 gals. and over are 2c less. Cleveland No. 4 price is for full compartment hose dump only.

Naphthas—to contract consumers off t.w. prices—Statewide: 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c. Lucas County: Less than 50 gals., tank wagon price; 50 to 249 gals., 0.5c; 250 to 499 gals., 1c; 500 gals. or over, 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)
Standard (*Third Grade*)

	†Net Dealer Crown	Standard	Gasoline Taxes	Kerosine T.W.
Covington, Ky.	9.5	8.5	6.5	9
Lexington, Ky.	11	8.5	6.5	9
Louisville, Ky.	10.5	9.5	6.5	8.5
Paducah, Ky.	8	8	6.5	8.5
Jackson, Miss.	10.5	9.5	7.5	*8.5
Vicksburg, Miss.	10	9	7.5	*8
Birmingham, Ala.	10.5	9.5	*8.5	9
Mobile, Ala.	9.5	7.5	*9.5	8.5
Montgomery, Ala.	10.5	9.5	*9.5	*9
Atlanta, Ga.	10	...	7.5	*9
Augusta, Ga.	11	...	7.5	*8.5
Macon, Ga.	11	...	7.5	*8.5
Savannah, Ga.	10	...	7.5	*8
Jacksonville, Fla.	10	9	8.5	8
Miami, Fla.	10	9	8.5	8
Pensacola, Fla.	9.5	8.5	*9.5	8
Tampa, Fla.	10	...	8.5	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Blue Crown (*Third Grade*)

	Dealer Prices: Red Crown Cons. T.W.	Red Crown	Blue Crown	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.6	9.6	8.5	4.5	10.3
Decatur, Ill.	10.9	8.9	8	4.5	9.5
Joliet, Ill.	11.9	9.6	8.5	4.5	10.3

(Continued on next page)

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon:

Alabama 1/40c on gasoline, 1/2c on kerosine; Arkansas 1/20c; Florida 1/8c; Illinois 3/100c; Indiana 1/5c in lots of 25 bbls. or less, 2/25c in lots of more than 24 bbls.; Kansas 1/50c; Louisiana 1/32c; Minnesota 7/200c; Missouri 1/50c; Nebraska 3/100c; Nevada, gasoline 1/20c; North Carolina 1/4c; North Dakota 1/20c; Oklahoma 2/25c; South Carolina 1/8c; South Dakota 1/20c; Tennessee 2/5c; and Wisconsin 3/100c.

Kerosine inspection fees only: Iowa 3/50c; Michigan 1/5c per gal.

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Mar. 2, 1942 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. Indiana (Cont'd)

Red Crown (*Regular Grade*)
Blue Crown (*Third Grade*)
Dealer Prices

	Red Crown Cons. T.W.	Red Crown	Blue Crown	Gaso-line Taxes	Kero-sine T.W.
Peoria, Ill.	10.7	9.2	9.1	4.5	10.1
Quincy, Ill.	8.9	7.9	7.9	4.5	10
Indianapolis, Ind.	11.6	9.7	9.6	5.5	*9.8
Evansville, Ind.	11.4	9.9	8.4	5.5	*9.6
South Bend, Ind.	12	10.5	10	5.5	*10.2
Detroit, Mich.	11.4	9.9	9.4	4.5	9.6
Grand Rapids, Mich.	11.4	9.3	9	4.5	9.6
Saginaw, Mich.	11.4	9.9	9.4	4.5	9.6
Green Bay, Wis.	12.2	10.7	9.7	5.5	10.6
Milwaukee, Wis.	12.1	10.6	10.1	5.5	10.5
La Crosse, Wis.	11.9	10.4	9.9	5.5	10.3
Minneapolis-St. Paul	11.9	9.9	9.5	5.5	10.3
Duluth, Minn.	12.2	10.7	10.2	5.5	10.6
Mankato, Minn.	11.9	10.4	9.5	5.5	10.3
Des Moines, Ia.	11.4	9.9	9.4	4.5	*9.8
Davenport, Ia.	11.7	10.2	9.7	4.5	*10.1
Mason City, Ia.	11.7	10.2	9.7	4.5	*10.1
St. Louis, Mo.	10.3	8.8	8.6	*4.5	9.8
Kansas City, Mo.	10.4	8.9	7.9	*4.5	9.4
St. Joseph, Mo.	11.2	9	8	*4.5	9.6
Fargo, N. D.	12.9	11.4	10.5	5.5	11.3
Huron, S. D.	12.3	10.8	10.3	5.5	10.7
Wichita, Kans.	10.3	8.2	6.5	4.5	8

Stanavo Aviation 73 Octane

Chicago, Ill.	15.7	4.5
Milwaukee, Wis.	15.9	5.5
Minneapolis, Minn.	15.7	5.5
St. Louis, Mo.	15.2	*4.5
Kansas City, Mo.	14.8	*4.5
Fargo, N. D.	16.7	5.5
Huron, S. D.	16.1	5.5

(Prices are base prices before discounts)

	Oleum Spirits	V.M.&P. Naphtha	Stani-sol	*Taxes
Chicago	13.5	13.8	12.8	4.5
Detroit	15.8	15	16.3	4.5
K. C., Mo.	13.3	14.3	13.8	1.5
St. Louis, Mo.	13.7	14.7	13.2	1.5
Milwaukee	14.4	15.4	14.9	5.5
Minnep'ls	14.2	15.2	13.5	5.5

Fuel Oils T. W.

Chicago	Standard Heater Oil
1-99 gals.	9
100-149 gals.	8
150 gals. & over	7.5

	Stanolex Fuel Oil No. 1	Stanolex Furnace Oil
1-99 gals.	8.5	8.5
100-149 gals.	7.5	7.5
150-399 gals.	7.5	7.5
400 gals. & over	7	7

	Stanolex Fuel Oil A	Stanolex Fuel Oil B
1-99 gals.	8	8
100-399 gals.	7	7
400-749 gals.	6	6
750 gals. & over	5.25	5.25

Stanolex Bunker C Fuel Oil	
1-399 gals	6.5
400-999 gals	5.5
1000 gals. & over	4.5

Other Points: Indianapolis	Stanolex No. 1	Stanolex Furnace Oil
1-99 gals.	....	*8.7
100 gals. & over	....	*7.7
Detroit		
1-99 gals.	....	7.8
100 gals. & over	....	6.8
Milwaukee		
1-99 gals.	....	8.7
100 gals. & over	....	7.7
Minneapolis		
1-99 gals.	....	8.5
100 gals. & over	....	7.5
St. Louis		
1-99 gals.	8.3	7.8
100 gals. & over	7.3	6.8
Kansas City		
1-99 gals.	....	7.6
100 gals. & over	....	6.6

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax; Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1.5c federal tax and state taxes.

S. O. Nebraska

(*Regular Grade*)

	T.W. Dealer	Gaso-line Taxes	Kero-sine T.W.
Omaha	11.4 8.9	6.5	9.8
McCook	12 9.4	6.5	9.5
Norfolk	11.9 10.4	6.5	10.3
North Platte	11 9.9	6.5	10
Scottsbluff	12.4 9.5	6.5	9.5

S. O. Louisiana

Esso Gasoline (*Regular Grade*)

	Consumer Tank Wagon	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
New Orleans, La.	8.75	9.25	8.5	*9.5
Baton Rouge, La.	8.75	9.25	8.5	*9.5
Alexandria, La.	8.75	9.25	8.5	*9.5
Lafayette, La.	9	9.5	8.5	*9
Lake Charles, La.	9	9.5	8.5	*11
Shreveport, La.	8.5	9	8.5	*8
Knoxville, Tenn.	11.5	12	8.5	12.5
Memphis, Tenn.	8.75	9.25	8.5	10.5
Chattanooga, Tenn.	10.5	11	8.5	11
Nashville, Tenn.	10.5	11	8.5	10
Bristol, Tenn.	9.75	10.25	8.5	12
Little Rock, Ark.	9.5	10	8	10

*Louisiana kerosine prices are ex 1c state tax.
Discounts:
Esso Gasoline—To undivided dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)
Thriftane (*Third Grade*)

	Humble *Tank Wagon	Humble Re-tail	Thriftane *Tank Wagon	Thriftane Re-tail	Gaso-line Taxes
Dallas, Tex.	8.5†	10.5	7.5†	8.5	5.5
Ft. Worth, Tex.	8.5††	10.5	7.5‡	9	5.5
Houston, Tex.	8.5	12.5	7.5	10.5	5.5
San Antonio, Tex.	8.5	12.5	7.5	10.5	5.5

	Kerosine *Tank Wagon	Retail
Dallas, Tex.	7	11
Ft. Worth, Tex.	7	11
Houston, Tex.	8	11
San Antonio, Tex.	7	10

74 Oct. Aviation Gasoline, Clear	Tank Car
FOB Baytown, Tex.	8.5

*To all classes of dealers & consumers.
†Less 1c allowance to dealers only.
‡Less 1½c allowance to dealers only.
††Less 2c allowance to dealers only.

The Texas Co.

	Gasoline—Dealer Fire-Chief (*Regular*)	T.W. Indian (*3rd Grade*)	Gaso-line Taxes
Dallas, Tex.	8.5*	7.5*	5.5
Ft. Worth, Tex.	8.5*	7.5*	5.5
Wichita Falls, Tex.	8.5	7.5	5.5
Amarillo, Tex.	8.5	7.5	5.5
Tyler, Tex.	8.5*	7.5*	5.5
El Paso, Tex.	11	10.5	5.5
San Angelo, Tex.	8.5	7.5	5.5
Waco, Tex.	8.5*	7*	5.5
Austin, Tex.	8.5	7.5	5.5
Houston, Tex.	8.5	7.5	5.5
San Antonio, Tex.	8.5	7.5	5.5
Port Arthur, Tex.	8.5	7.5	5.5

*Less 1c temporary allowance to all dealers.

Continental Oil Co.

(N.B. Prices are Continental's "normal" prices. Prices do not reflect temporary reductions made to meet local competition)

	Conoco Bronz-z-z (*Regular*) †Tank Wagon	De-mand (*3rd Grade*)	Gaso-line Taxes	Kero-sine T.W.
Denver, Col.	11	10	5.5	11
Grand Junction, Col.	12	11	5.5	12
Pueblo, Col.	10.5	9.5	5.5	10.5
Casper, Wyo.	11.5	10.5	5.5	12
Cheyenne, Wyo.	11	10	5.5	11.5
Billings, Mont.	12.5	11.5	6.5	12.5
Butte, Mont.	13.5	12.5	6.5	13.5
Great Falls, Mont.	12.5	11.5	6.5	12.5
Helena, Mont.	13	12	6.5	13
Salt Lake City, Utah	13.5	12.5	5.5	14.5
Boise, Ida.	14.1	13.1	6.5	16.5
Twin Falls, Ida.	15.6	14.6	6.5	17
Albuquerque, N. M.	10.5	9.5	*7	10
Roswell, N. M.	10	9	*7	9.5
Santa Fe, N. M.	10.5	9.5	*7.5	10
Ft. Smith, Ark.	9.5	9.25	*7	9.5
Texarkana, Ark.	9	8	*5.5	9
Muskogee, Okla.	9.5	8.5	7	8.5
Oklahoma City, Okla.	9.5	8.5	7	8.5
Tulsa, Okla.	9.5	8.5	7	8.5

*Taxes: In gasoline tax column are included these city taxes—Albuquerque, & Roswell, 0.5c; Santa Fe, 1c. Texas 4c state tax applies within city limits of Texarkana, Ark.; Okla. 5.5c state applies within city limits of Ft. Smith, Ark.
†To consumers & dealers.
Discounts: To dealers only—Cheyenne 1.5c on Bronz-z-z & Demand.

S. O. California

Standard Gasoline (*Regular Grade*)
Flight Gasoline (*Third Grade*)

	Standard Posted Net Tank Truck	Standard Posted Re-tail	Flight Posted Net Tank Truck	Flight Posted Re-tail	Gaso-line Taxes
San Francisco, Cal.	10	14	9	12	4.5
Los Angeles, Cal.	9.5	13.5	8.5	11.5	4.5
Fresno, Cal.	11	15	10	13	4.5
Phoenix, Ariz.	12	16	10	13	6.5
Reno, Nev.	12	16	11	14	5.5
Portland, Ore.	10.5	14.5	9.5	12.5	6.5
Seattle, Wash.	10.5	14.5	9.5	12.5	6.5
Spokane, Wash.	12.5	16.5	11.5	14.5	6.5
Tacoma, Wash.	10.5	14.5	9.5	12.5	6.5

Std. Aviation 73

	Posted Net Tank Truck	Gasoline Taxes	Kerosine Tank Truck
San Francisco, Cal.	12.5	4.5	11.5
Los Angeles, Cal.	12	4.5	10
Fresno, Cal.	13.5	4.5	12.5
Phoenix, Ariz.	14.5	6.5	12.5
Reno, Nev.	14.5	5.5	13.5
Portland, Ore.	13	6.5	13.5
Seattle, Wash.	13	6.5	13.5
Spokane, Wash.	16	6.5	16.5
Tacoma, Wash.	13	6.5	13.5

Discounts:
Resale & Commercial: T.C. deliveries 0.25c per gal. off posted net tank truck.
Commercial: Retail deliveries, and /or tank truck deliveries of less than 40 gals., 4c per gal. above posted net tank truck price for Standard Aviation and Standard Gasoline, and 3c per gal. above posted net tank truck for Flight Gasoline, except single deliveries, of less than 40 gals. to Marine trade only, which are billed at posted net tank truck price.

Canada

PRICES ON IMPERIAL OIL, LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons
3-Star Imperial Gasoline (*Regular Grade*)

	†Gasoline T.W.	*Gasoline Taxes	†Kero-sine T.W.
Hamilton, Ont.	17.5	11	18
Toronto, Ont.	17.5	11	18
Brandon, Man.	21	10	23
Winnipeg, Man.	20.5	10	22.5
Regina, Sask.	18	10	20
Saskatoon, Sask.	20.8	10	22.8
Edmonton, Alta.	18.9	10	20.9
Calgary, Alta.	16	10	18
Vancouver, B. C.	15	10	24
Montreal, Que.	17	11	17.5
St. John, N. B.	16.5	13	19
Halifax, N. S.	16.5	13	19

*Includes 3c Federal, and Provincial taxes.
†To divided & undivided dealers.

Tank Wagon Price Changes
(These changes have been made in price tables)

Atlantic Refining—White Flash Gasoline:
Jacksonville dealer cut 1c Feb. 18.

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon:
Alabama 1/40c on gasoline, 1/2c on kerosine; Arkansas 1/20c; Florida 1/8c; Illinois 3/100c; Indiana 1/5c in lots of 25 bbls. or less, 2/25c in lots of more than 25 bbls.; Kansas 1/50c; Louisiana 1/32c; Minnesota 7/200c; Missouri 1/50c; Nebraska 3/100c; Nevada, gasoline 1/20c; North Carolina 1/4c; North Dakota 1/20c; Oklahoma 2/25c; South Carolina 1/8c; South Dakota 1/20c; Tennessee 2/5c; and Wisconsin 3/100c.
Kerosine inspection fees only: Iowa 3/50c; Michigan 1/5c per gal.

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates shown.

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (Aug. 23, '41)
Bradford-Allegany $2.75
Southwest Penna. $2.40
Eureka (West Va.) $2.34
Corning, O. (May 27, '41) $1.31

Posted by The Pennzoil Co. (Aug. 23, '41)
National Transit $2.68*

Posted by Valvoline Pipe Lines (Aug. 23, '41)
Bradford (Elk & McKean Counties, Pa.) $2.75
Warren, Forest, Venango, Clarion & Butler Counties, Pa. $2.68
Alleghany, Beaver, Washington & Greene Counties, Pa. $2.40
West Virginia $2.34
Southeastern Ohio $2.30

*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $2.63 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (May 27, '41)
Midland, Midland County $1.44
Sherman $1.39

Posted by Simrall Corp. (May 27, '41)
Greendale, Porter, Vernon, Crystal & Wise $1.44
Buckeye, Bentley, Edenville, Beaverton & Monitor (sweet crude type) $1.42
Freeman, Redding, Lincoln & Winterfield $1.39
West Branch-Arenac $1.24
Hamilton-Grout $1.29

Posted by Sohio Corp. (Mich. Div.)
Traverse crude in Allegan, Kent, Ottawa & Van Buren Cos. (June 2, '41) $1.45
Trenton crude, Monroe Co. (June 2, '41) $1.39

Posted by Bay Pipe Line Corp. (May 27, '41)
Saginaw & Wise $1.44
Clare $1.11
Buckeye, Bentley & Kawkawlin $1.42
Adams (June 1, '41) $1.27

ILLINOIS-INDIANA-KENTUCKY-OHIO

Posted by Sohio Corp. (May 21, '41)
Illinois Basin, including Griffin pool $1.37
Carmi, Storms, Ill. area $1.32
Birk City, Ky. area $1.32
Corydon, Ky. area, Henderson $1.32

Posted by Ohio Oil Co. (May 21, '41)
Illinois Basin $1.37
Eastern Ill. & Western Ind. 1.22

Posted by Carter Oil Co. (May 21, '41)
Loudon, Fayette Co. Ill. $1.37

Posted by Mohawk Oil Lines, Inc. (May 21, '41)
Southern Illinois $1.37

Posted by Ashland Oil & Transp. Co.
Somerset oil in Ash. Lines, Ky.: (June 19, '41)
Big Sandy River $1.38
Kentucky River $1.43

Posted by Ownesboro-Ashland Co.
Owensboro, Ky. area (May 21, '41) $1.32

Posted by S. O. Ohio (Sept. 1, '41)
Lima, O. $1.25
Cleveland, Lodi & Chatham (O.) areas $1.30

MID-CONTINENT

OKLAHOMA-KANSAS-NORTH TEXAS

(See below for companies posting and dates)

Gravity	Schedule No. 1	Schedule No. 2	Schedule No. 3
Below 21	$0.85	$0.75	$0.81
21-21.9	.87	.78	.83
22-22.9	.89	.81	.85
23-23.9	.91	.84	.87
24-24.9	.93	.87	.89
25-25.9	.95	.90	.91
26-26.9	.97	.93	.93
27-27.9	.99	.96	.95
28-28.9	1.01	.99	.97
29-29.9	1.03	1.02	.99
30-30.9	1.05	1.05	1.01
31-31.9	1.07	1.07	1.03
32-32.9	1.09	1.09	1.05
33-33.9	1.11	1.11	1.07
34-34.9	1.13	1.13	1.09
35-35.9	1.15	1.15	1.11
36-36.9	1.17	1.17	1.13
37-37.9	1.19	1.19	1.15
38-38.9	1.21	1.21	1.17
39-39.9	1.23	1.23	1.19
40 & above	1.25	1.25	1.21

Above schedules posted by:

No. 1: **S. O. Indiana** May 20, '41 in Okla. & Kans. **Sinclair-Prairie** May 20, '41 in Okla. & Kans. beginning with 25-25.9. **Continental** May 19, '41 in Okla. & Kans. beginning with Below 29 at $1.01. **Texaco** May 19, '41 in Okla. & Kans. beginning with 28-28.9.

No. 2: **Carter** May 20, '41 in Okla. **Shell** Dec. 5, '41 in Okla. & Kans. **Magnolia** May 21, '41 in Okla.

No. 3: All Dec. 11, '41: **Stanolind & Continental** in N. Tex. **Sinclair-Prairie** in N. Central Tex. **Magnolia & Texaco** in N. & N. Central Tex. **Continental, Magnolia & Sinclair-Prairie** schedules begin with Below 29 at $0.97. **Texaco** schedule begins with 28-28.9.

TEXAS & NEW MEXICO FIELDS

Posted by Humble Oil & Refining Co.

(May 21, '41, except Panhandle, Tex. July 9, '41 and W. Central Texas Dec. 11, '41)

Gravity	Refugio	Texas Gulf Coast	Mirando	Anahuac	Dickinson	East Central Texas	West Central Texas	Panhandle, Texas	W. Texas & New Mex.	Hawkins Texas
Below 20	$1.08	$1.06	$1.03	$0.98	$0.93	....	....	$0.73	$0.70	$0.80
20-20.9	1.10	1.08	1.05	1.00	.95	....	....	.75	.72	.82
21-21.9	1.12	1.10	1.07	1.02	.97	....	....	.77	.74	.84
22-22.9	1.14	1.12	1.09	1.04	.99	....	....	.79	.76	.86
23-23.9	1.16	1.14	1.11	1.06	1.01	....	....	.81	.78	.88
24-24.9	1.18	1.16	1.13	1.08	1.03	....	....	.83	.80	.90
25 & above	....	....	....	....	....	....	....	....	....	.92
25-25.9	1.20	1.18	1.15	1.10	1.05	$0.97	$0.91	.85	.82	....
26-26.9	1.22	1.20	1.17	1.12	1.07	.99	.93	.87	.84	....
27-27.9	1.24	1.22	1.19	1.14	1.09	1.01	.95	.89	.86	....
28-28.9	1.26	1.24	1.21	1.16	1.11	1.03	.97	.91	.88	....
29-29.9	1.28	1.26	1.23	1.18	1.13	1.05	.99	.93	.90	....
30-30.9	1.30	1.28	1.25	1.20	1.15	1.07	1.01	.95	.92	....
31-31.9	1.32	1.30	1.27	1.22	1.17	1.09	1.03	.97	.94	....
32-32.9	1.34	1.32	1.29	1.24	1.19	1.11	1.05	.99	.96	....
33-33.9	1.36	1.34	1.31	1.26	1.21	1.13	1.07	1.01	.98	....
34-34.9	1.38	1.36	1.33	1.28	1.23	1.15	1.09	1.03	1.00	....
35-35.9	1.40	1.38	1.35	1.30	1.25	1.17	1.11	1.05	1.02	....
36-36.9	1.42	1.40	1.37	1.32	1.27	1.19	1.13	1.07	1.04	....
37-37.9	1.44	1.42	1.39	1.34	1.29	1.21	1.15	1.09	1.06	....
38-38.9	1.46	1.44	1.41	1.36	1.31	1.23	1.17	1.11	1.08	....
39-39.9	1.48	1.46	1.43	1.38	1.33	1.25	1.19	1.13	1.10	....
40 & above	1.50	1.48	1.45	1.40	1.35	1.27	1.21	1.15	1.12	....

Refugio: Includes crude purchased in East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, & Tom O'Connor fields.

Texas Gulf Coast: Includes crude purchased in Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa New, Raccoon Bend, South Thompsons, Sugarland, Thompsons, & Webster fields.

Mirando: Includes crude purchased in Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North & South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, & Tesoro fields.

Anahuac: Includes crude purchased in Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (Old & New), Pierce, Junction, Red Fish Reef, & Turtle Bay fields.

Dickinson: Includes crude purchased in Dickinson, Gilloc, Hardin, League City, & Rowan fields.

East Central Texas: Includes crude purchased in Anderson, Cherokee, Limestone, & Navarro Counties, and Navarro Crossing field.

West Central Texas: Includes crude purchased in Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, & Throckmorton Counties.

Panhandle, Texas: Includes crude purchased in Carson, Gray, Hutchinson & Wheeler Counties.

West Texas & New Mexico: Includes crude purchased in Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, & Yoakum Counties, Texas; Lea County, N. M.

Hawkins: Includes crude purchased in Hawkins Field, Wood County, Texas.

Conroe $1.43
Tomball 1.40
Van 1.08
Talco 0.79
East Texas & Flag Lake $1.25
Flour Bluff, E. Flour Bluff 1.33
Salt Flat, N. Salt Flat 1.14
Darst Creek, Hilbig, Carroll 1.14
Clark, Zoboroski $1.14
Alice, Benavides (N. Sweden), Sun 1.35
Ben Bolt, Clark-Muil, Tom Graham 1.35
Yates (Pecos) 0.95
La Rosa 1.33

MAGNOLIA PETROLEUM CO.

(May 21, '41)

Panhandle, Tex.—(July 9, '41)—Same as Humble except Magnolia begins with Below 29 at $0.91.

West Texas—In Crane, Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum & Gaines Cos.—Same as Humble except Magnolia begins with Below 25 at $0.80.

N. Mexico—In Lea Co.—Same as Humble except Magnolia begins with Below 25 at $0.80 & ends with 36 & above at $1.04.

Cass & Panola Cos., Tex.—Below 25 at $0.88, plus 2c per degree of gravity to 40 & above at $1.20.

Mirando, Tex.—Same as Humble.

East Texas $1.25
Darst Creek 1.14
Luling 1.05
Talco ..... .79
Lytton Springs $1.17
Cleveland-Liberty Co. 1.26
Tomball 1.40

SINCLAIR-PRAIRIE OIL MARKETING CO.

Texas Panhandle—(May 23, '41)—Same as Humble except Sinclair-Prairie begins with Below 25 at $0.83.

West Texas & New Mexico—(May 30, '41)—Same as Humble except Sinclair-Prairie begins with Below 25 at $0.80.

Texas Gulf Coast—(May 21, '41)—Same as Humble.

Mexia District, Texas—(May 30, '41)—Same as Humble, East Central Texas, except Sinclair-Prairie also posts Below 25 at $0.95.

East Texas—(May 21, '41) $1.25

Long Lake, Texas—(May 21, '41) 1.23

Chapel Hill (Washington Co.) Tex. (Jan. 20, '42)
Below 50 grav. $1.18
50 grav. & above 1.30

STANOLIND OIL PURCHASING CO.

(May 21, '41)

Clinton, Tex.—Same as Humble Tex. Gulf Coast except Stanolind begins with Below 21 at $1.08.

Fairbanks, N. Houston & Rosslyn, Tex.—Same as Humble Dickinson schedule.

E. Texas ..... $1.25 **Satsuma & Tomball, Tex.** $1.40

STANOLIND OIL & GAS CO.

(May 21, '41)

W. Beaumont & Spindletop (Jefferson Co., Tex.) **& High Island** (Galveston Co., Tex.)—Same as Humble Tex. Gulf Coast.

Hendrick & Henderson (Winkler Co., Tex.)—Same as Humble West Texas except Stanolind begins with Below 26 at $0.82.

Jay Welder (Calhoun Co., Tex.)—Nov. 14, '41—Same as Humble Anahuac.

THE TEXAS CO.

(May 21, '41)

Panhandle, Tex.—Same as Humble except Texaco begins with 34-34.9 at $1.03.

W. Texas & Lea Co., N. M.—Same as Humble except Texaco posts $0.78 for 23.9 & below and ends with 36 & above at $1.04.

Texas Gulf Coast—Same as Humble except Texaco ends with 34 & above at $1.36.

Duval, Mirando, Tex.—Same as Humble Mirando except Texaco ends with 28-28.9 at $1.21.

Refugio, Tex.—Same as Humble except Texaco ends with 28-28.9 at $1.26.

East Texas $1.25
Darst Creek, Tex. 1.14
Conroe, Tex $1.43
Hockley & Cochran Cos., Tex ..... .87

SHELL OIL CO., INC.

(May 20, '41)

West Texas & Lea Co., N. M.—Same as Humble except Shell ends with 36 & above at $1.04.

Fisher Co., Tex.—(Dec. 11, '41)—Same as Humble W. Central Texas except Shell begins with Below 25 at $0.89.

East Texas $1.25
Livingston field, Polk Co., Tex. 1.25
Pecos Co., Tex., except Yates Shallow pool $0.95
Pecos Co., Yates Shallow pool ..... .82

CONTINENTAL OIL CO.

Carson & Hutchinson Cos., Tex.—(July 9, '41)—Same as Humble Panhandle except Continental begins with Below 29 at $0.91.

Mirando, Tex. (July 1, '41)—Same as Humble.

Wade City & Clara Driscoll, Tex.—(July 1, '41)—Same as Humble Refugio.

Alfred & Magnolia City, Tex.—(May 21, '41), $1.35. **Eddy Co., N. M.**—(May 30, '41)—Same as Humble N. M. schedule except Continental begins with Below 29 at $0.88.

PAN AMERICAN PRODUCTION CO.

(May 21, '41)

Hastings & S. Houston, Tex.—Same as Humble Tex. Gulf Coast except Pan Am. begins with Below 21 at $1.08.

Gillock, Tex.—Same as Humble Dickinson except Pan Am. begins with Below 21 at $0.95.

East Texas $1.25
Cayuga, Tex. ..... .90
Goodrich, Tex. (Dec. 1, '41) 1.20

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates shown.

CALIFORNIA

Posted by S. O. California, May 23, 1941

All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Olinda Brea Canon	Athena-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Gravity
14-14.9	....	$0.68	....	....	$0.71	....	$0.70	....	$0.70	$0.70	$0.70	$0.72	....	....	....	....	....	$0.73	$0.73	$0.73	14-14.9
15-15.9	....	.71	....	....	.75	$0.76	.72	....	.72	.71	.72	.72	....	....	....	....	....	.73	.73	.73	15-15.9
16-16.9	....	.74	$0.79	....	.79	.79	.75	....	.74	.73	.75	.72	....	....	....	....	....	.73	.75	.73	16-16.9
17-17.9	....	.78	.82	....	.82	.82	.78	....	.77	.76	.78	.72	....	....	....	....	....	.75	.78	.73	17-17.9
18-18.9	$0.80	.82	.86	....	.86	.85	.81	....	.80	.79	.82	.74	....	....	....	....	....	.78	.81	.73	18-18.9
19-19.9	.84	.86	.90	....	.89	.88	.85	....	.83	.82	.85	.77	....	....	....	....	$0.73	.81	.84	.75	19-19.9
20-20.9	.88	.90	.94	....	.93	.92	.88	....	.86	.85	.89	.80	....	....	....	....	.76	.85	.87	.77	20-20.9
21-21.9	.92	.94	.98	....	.96	.95	.91	....	.89	.89	.92	.84	....	....	....	....	.79	.90	.90	.80	21-21.9
22-22.9	.96	.98	1.02	$0.88	.99	.98	.95	....	.93	.93	.96	.87	....	....	....	....	.83	.94	.93	.83	22-22.9
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	.98	....	.97	.98	1.00	.91	....	....	....	....	.87	.99	.96	.86	23-23.9
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	1.01	....	1.01	1.02	1.03	.94	$0.99	....	....	....	.90	1.03	.99	.89	24-24.9
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	1.04	....	1.05	1.06	1.07	.98	1.02	....	....	....	.94	1.07	1.01	.92	25-25.9
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	1.08	....	1.09	1.10	1.11	1.01	1.06	....	....	....	.97	1.11	1.04	.95	26-26.9
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	1.07	.98	27-27.9
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	1.04	1.19	1.10	1.00	28-28.9
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	1.07	1.24	1.13	1.02	29-29.9
30-30.9	1.23	1.24	....	....	1.23	1.22	....	1.21	....	Elwood	....	1.15	1.21	1.15	$1.01	$1.09	1.10	1.28	1.16	1.04	30-30.9
31-31.9	....	....	....	....	....	1.24	....	1.25	....	Terrace	....	1.19	1.24	1.19	1.04	1.12	1.14	....	....	1.06	31-31.9
32-32.9	....	....	....	....	....	....	....	1.29	....	F.o.b. Ship	....	1.23	1.28	1.23	1.07	1.14	1.17	....	....	1.09	32-32.9
33-33.9	....	....	....	....	....	....	....	1.32	....	$1.22	....	1.27	....	1.26	1.10	1.17	....	....	....	1.11	33-33.9
34-34.9	Kettleman Hills							1.36	....	1.25	....	1.31	....	1.30	1.13	1.20	....	....	....	1.13	34-34.9
35-35.9	....	$1.23	....	....	....	....	....	....	....	1.28	....	1.35	....	....	1.16	1.22	....	....	....	....	35-35.9
36-36.9	....	1.26	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	....	36-36.9
37-37.9	....	1.29	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....	37-37.9
38-38.9	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	38-38.9
39-39.9	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	39-39.9
40-40.9	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	40-40.9

Playa Del Rey: (FOB Standard Pipe Line) 20-20.9, $0.80; 21-21.9, $0.84; 22-22.9, $0.87.
Wheeler Ridge: 22-22.9, $0.76; 23-23.9, $0.80; 24-24.9, $0.83.
Newhall, Kern River, Kern Front, McKittrick & Round Mountain: 14-14.9, $0.73.

LOUISIANA-ARKANSAS

Posted by S. O. Louisiana, May 22, '41

Gravity	Atlanta, Ark. et al.	De Soto, La. et al.	Rodessa, La. et al.	Bunkie, La. et al.	Darrow, La. et al.	University, La. (Baton Rouge)
40 & above	$1.08	$1.18	$1.20	$1.30	$1.30	....
39-39.9	1.06	1.16	1.18	1.28	1.28	....
38-38.9	1.04	1.14	1.16	1.26	1.26	....
37-37.9	1.02	1.12	1.14	1.24	1.24	....
36-36.9	1.00	1.10	1.12	1.22	1.22	....
35-35.9	.98	1.08	1.10	1.20	1.20	....
35 & above	....	....	....	....	....	$1.36
34-34.9	.96	1.06	1.08	1.18	1.18	1.34
33-33.9	.94	1.04	1.06	1.16	1.16	1.32
32-32.9	.92	1.02	1.04	1.14	1.14	1.30
31-31.9	.90	1.00	1.02	1.12	1.12	1.28
30 & below	....	....	....	....	....	1.26
30-30.9	.88	.98	1.00	1.10	1.10	....
29-29.9	.86	.96	.98	1.08	1.08	....
28-28.9	.84	.94	.96	1.06	1.06	....
27-27.9	.82	.92	.94	1.04	1.04	....
26-26.9	.80	.90	.92	1.02	1.02	....
25-25.9	.78	.88	.90	1.00	1.00	....
Below 25	....	.86	.88	.98	....	....
24-24.9	.76	....	.88	....	.98	....
23-23.9	.74	....	.86	....	.96	....
22-22.9	.72	....	.84	....	.94	....
21-21.9	.70	....	.82	....	.92	....
Below 21	.68	....	.80	....	.90	....

Atlanta schedule includes Buckner, Lewisville, Magnolia, Village & Schuler (Jones Sand), Ark.

De Soto schedule includes Sabine, Fouke, Homer, Miller Co., Nebo & Sugar Creek.

Rodessa schedule includes Cotton Valley & Shreveport (Cross Lake) ending with Below 25 at $0.88; Anse La Butte (Aug. 1, '41); Caddo (Oct. 15, 1941).

Bunkie schedule includes Eola, Olla, & South Olla.

Darrow schedule includes Bayou Mallet, Choctaw, Jeanerette, Lirette, N. & S. Crowley, Port Allen, Port Barre, Potash, Roanoke, & St. Martinville.

Big Creek, Dorcheat, McKamie Distillates (Sour) $1.15
Heavy Smackover Crude ..... .83
Cotton Valley Distillate (Sept. 1, '41) 1.40
Cotton Valley (Holloway Sand Crude) 1.25
Lisbon Distillate 1.20

(Continued next column)

LOUISIANA-ARKANSAS (*Cont'd*)

Posted by Shell Oil Co., Inc. (May 20, '41)

Gravity	Iowa	Roanoke	Gibson
Below 20	$0.99	$0.94	$0.89
20-20.9	1.01	.96	.91
21-21.9	1.03	.98	.93
22-22.9	1.05	1.00	.95
23-23.9	1.07	1.02	.97
24-24.9	1.09	1.04	.99
25-25.9	1.11	1.06	1.01
26-26.9	1.13	1.08	1.03
27-27.9	1.15	1.10	1.05
28-28.9	1.17	1.12	1.07
29-29.9	1.19	1.14	1.09
30-30.9	1.21	1.16	1.11
31-31.9	1.23	1.18	1.13
32-32.9	1.25	1.20	1.15
33-33.9	1.27	1.22	1.17
34 & above	1.29	1.24	1.19

Iowa schedule includes Black Bayou & White Castle La. fields.

Roanoke schedule includes Chalkley, La. field.

Gibson schedule includes S. Houma, Hester & W. Lake Verret, La. fields.

Happytown field, St. Martin Par., La. $1.15

Posted by Arkansas Fuel Oil Corp.

Urania, La. (May 22, '41) $1.15

Posted by Continental Oil Co. (May 21, '41)

Tepetate, La. $1.18
Ville Platte, La. 1.20
Lake Arthur, La. 1.18
Ritchie, La. (Sept. 1, '41) 1.08

Abbeville, La.

Below 36 $1.07	37-37.9 $1.11	39-39.9 $1.15
36-36.9 1.09	38-38.9 1.13	40 & above 1.17

CANADIAN FIELDS

Posted by Imperial Oil Limited

Western Ontario (Nov. 6, 1939)

Petrolia ..... $2.10 Oil Springs $2.17

Turner Valley Crude Oil (July 16, '41)

(Prices FOB producer's tankage)

33-33.9 $1.35	44-44.9 1.57	55-55.9 $1.79
34-34.9 1.37	45-45.9 1.59	56-56.9 1.81
35-35.9 1.39	46-46.9 1.61	57-57.9 1.83
36-36.9 1.41	47-47.9 1.63	58-58.9 1.85
37-37.9 1.43	48-48.9 1.65	59-59.9 1.87
38-38.9 1.45	49-49.9 1.67	60-60.9 1.89
39-39.9 1.47	50-50.9 1.69	61-61.9 1.91
40-40.9 1.49	51-51.9 1.71	62-62.9 1.93
41-41.9 1.51	52-52.9 1.73	63-63.9 1.95
42-42.9 1.53	53-53.9 1.75	64 & over 1.97
43-43.9 1.55	54-54.9 1.77	

Absorption Gasoline (July 16, '41)

90% Rec., 20 lb. Reid v.p. $2.28
90% Rec. 17 lb. Reid v.p. 2.44

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co. (May 20, '41)

Salt Creek (except Tensleep crude), Midway & Dutton Creek, Wyo.

Below 29 $0.96	32-32.9 $1.04	36-36.9 $1.12	
29-29.9 .98	33-33.9 1.06	37-37.9 1.14	
30-30.9 1.00	34-34.9 1.08	38-38.9 1.16	
31-31.9 1.02	35-35.9 1.10	39-39.9 1.18	
		40 & above 1.20	

Wyoming:		Wyoming:	
Tensleep Crude	$0.6785	Grass Creek Light	$1.00
Frannie Light	.70	Grass Creek Heavy	.50
Frannie Heavy	.47	Elk Basin	1.00
Hamilton Dome	.45	Iles, Colo.	1.07

Posted by Ohio Oil Co. (May 20, '41)

Elk Basin, Wyo. $1.00
Grass Creek, Wyo., Light 1.00
Rock Creek, Wyo. 1.15
Lance Creek, Wyo., (July 1, '41) 1.12

Posted by Continental Oil Co. (May 21, '41)

Ft. Collins & Wellington, Col.

Below 29 $0.96	32-32.9 $1.04	36-36.9 $1.12	
29-29.9 .98	33-33.9 1.06	37-37.9 1.14	
30-30.9 1.00	34-34.9 1.08	38-38.9 1.16	
31-31.9 1.02	35-35.9 1.10	39-39.9 1.18	
		40 & above 1.20	

Canon City & Florence, Col.	$1.05	Big Muddy, Wyo., (May 30, '41)	$1.08
Cat Creek, Mont.	1.15	Lance Creek, Wyo., (July 1, '41)	$1.12

Posted by Independent Pipe Line Co. (Aug. 1, '41)

Falls City, Neb., field price $0.90
Falls City, Neb., loaded in tank cars 0.95
Shubert, Neb., loaded in tank cars 0.97

SOUTHEASTERN FIELDS

Posted by Allied Pipe Line Corp.

Tinsley (Miss.) Crude (Oct. 16, '41)

24-24.9	$0.745	32-32.9	$0.905
25-25.9	.765	33-33.9	.925
26-26.9	.785	34-34.9	.945
27-27.9	.805	35-35.9	.965
28-28.9	.825	36-36.9	.985
29-29.9	.845	37-37.9	1.005
30-30.9	.865	38-38.9	1.025
31-31.9	.885	39-39.9	1.045
		40 & above	1.065

Pickens (Miss.) Crude (Dec. 16, '41)

24-24.9	$0.685	32-32.9	$0.845
25-25.9	.705	33-33.9	.865
26-26.9	.725	34-34.9	.885
27-27.9	.745	35-35.9	.905
28-28.9	.765	36-36.9	.925
29-29.9	.785	37-37.9	.945
30-30.9	.805	38-38.9	.965
31-31.9	.825	39-39.9	.985
		40 & above	1.005

CLASSIFIED

Address Blind Box Number ads to National Petroleum News, 530 Penton Building, Cleveland, Ohio, unless otherwise specified.

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With Oil Jobber where the fine points of distribution and operation may be neglected. Will show profitable performance or no deal. Box No. 76.

Pipe line pumping station engineer and Morse operator. Understands screw and welded line construction or repairs. Box No. 69.

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Wanted—3500-gallon or more tank truck—semi trailer or train. Must be in good condition. Major Oil Products Co., 3711 S. California Ave., Chicago, Ill. Virginia 2010.

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1937 Ford—new 95 H. P. Reconditioned motor 1010-gallon, 4 compartments — Barrel and side can racks each side. Dual S D 22 Goodrich rear tires, new April 1941. Fronts recapped in June—tires to last two years. 1933 Mack—804-gallon, 6 compartments—Quaker tank 825 x 20 Dual rear tires to last 1½ years. Closed side can racks. Pictures available—Trucks priced right. Address P. O. Box 386, Marion, Indiana.

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Copy must reach us not later than Saturday preceding date of issue.

All advertisements carried on this page are payable in advance.

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These new rates were effective February 25, 1942

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PERSONALS

George P. Gillette, president of Chalmette Oil Distributing Co., New Orleans, is substituting the "V for Victory" code for the colon in his correspondence. At least in a letter Mr. Gillette wrote to NPN asking for some information, he started his letter Gentlemen . . . — instead of the usual : .

* * *

They met, and they parted—**Michael Joel,** formerly with Amtorg Trading Corp. in New York, and a wild-eyed young Air Corps private from Bolling Field, who twirled a .45 automatic.

It was Feb. 23, and the acquaintance was short, but Mr. Joel won't forget the day for a long, long time. It was the day he went to work for Office of Price Administration.

The soldier—who commandeered Mr. Joel's car and waved the gun back and forth across the oil man's squirming stomach — had just killed a taxi driver with the same weapon, he told police later. And Mr. Joel, who arrived at work with three Washington, D. C., policemen on his trail, spent most of his first day with OPA in the jailhouse undergoing a lively grilling. Score: 1 dead, 1 in jail, and 1 oil man who went to work for the government and received one of the hottest receptions on record.

* * *

Members and guests who attended the semi-annual dinner and bridge party of the Chicago Oil Men's Club on Feb. 26, agreed that the party was a "huge success". **H. George Donovan,** Globe Oil & Refining Co., was main prize winner and took home an electric roaster as a raffle prize and a bottomless ink well as a prize in the auction bridge game.

R. A. Zust, Cities Service, and **Floyd J. Moore,** Hughes Oil Co., won first prizes in the auction and contract bridge games, respectively. Other oil men who were reported as winning prizes at the party were **H. B. Kirby,** Consumers Co.; **R. G. Satterlee** and **Fred Schaeffer,** both of Arrow Petroleum Co.; **Wilson Henry,** Valvoline; **W. G. (Bill) Franke,** American Mexican Petroleum Co.; **M. G. McGrath,** Transamerican Petroleum Co.; **E. Freeman,** Acme Petroleum Co.; **J. Glen Phinney,** Cities Service; and **W. H. Ganley,** Falley Petroleum Co.

"I once stuffed newspapers for the Los Angeles Times, so guess I'm entitled to sit here for a few minutes," Office of Petroleum Co-ordinator's Material Director **William F. Huff** said at the Feb. 25 meeting of Cole Oil Investigating Subcommittee, as he joined reporters at the press table. After a few minutes of genial banter, Mr. Huff resumed his seat with other OPC division directors as the hearing got under way.

* * *

E. J. "Colonel" Green can "bulldoze" a truck with the best of 'em. Mr. Green is administrative assistant in Office of Petroleum Co-ordinator's refining division and the "bulldozing" is like this: While crossing a Washington street last week, he spotted a driverless truck coming toward him. It was just gathering momentum. The "Colonel" jumped on the running board and grabbed the steering wheel with the idea of stopping the juggernaut. But the door was locked and jammed. The truck was rolling faster and faster toward pedestrian-crowded Constitution Ave. Knowing it was useless to stay with the truck any longer, but sensing the loss of life this truck might cause if it roared into a crowd, Mr. Green shouted "Clear the way!", aimed it toward a tree and leaped. The result: a slightly damaged tree and truck and an equally slightly damaged "Colonel" Green with a cut knee and a torn suit. However, the truck's owner promises a new suit and Mr. Green is now wondering how to get a sample of that truck's contents. It was a liquor truck.

* * *

Ted A. Helling, vice-president of the Eldorado Refining Co., Eldorado, Kans., is now a full fledged banker. He has been elected president of the Eldorado National Bank of his home town, succeeding **Robert H. Bradford,** who died Jan. 7 and who also was an officer of the Eldorado Refining Co., having been vice-president and treasurer. This last job has been divided between two old refinery men, **George Peterschmidt** being elected treasurer of the refining company and **Clarence Rice,** for years sales manager, being made secretary.

"I was Bombed in Chungking," or some title to this effect may one day be the name of a book by **Quinn Shaughnessy,** former price executive of Office of Price Administration.

By this time, Mr. Shaughnessy should be "somewhere in the Far East", presumably in either Chungking or Bombay, the latter being the city he's to work out of as an executive of the China Defense Supplies, Inc. He is liaison agent between this organization and various military missions operating in that area, NPN was told.

* * *

From London comes a message to NPN that **S. J. Vos** has been appointed a director of Trinidad Leaseholds Ltd. He has been general sales manager of company's United Kingdom marketing organization since 1930.

* * *

Major A. N. Horne

Major A. N. Horne, Bartlesville, manager of pipeline division, Cities Service Oil Co., has been ordered to military service in Washington, D. C. Before he left for active duty the office force presented him with a fine wrist watch, a present from the 210 members of the pipeline division. When asked how many jewels the watch had, he replied "210 of the finest."

* * *

CHAMPION SPARK PLUGS

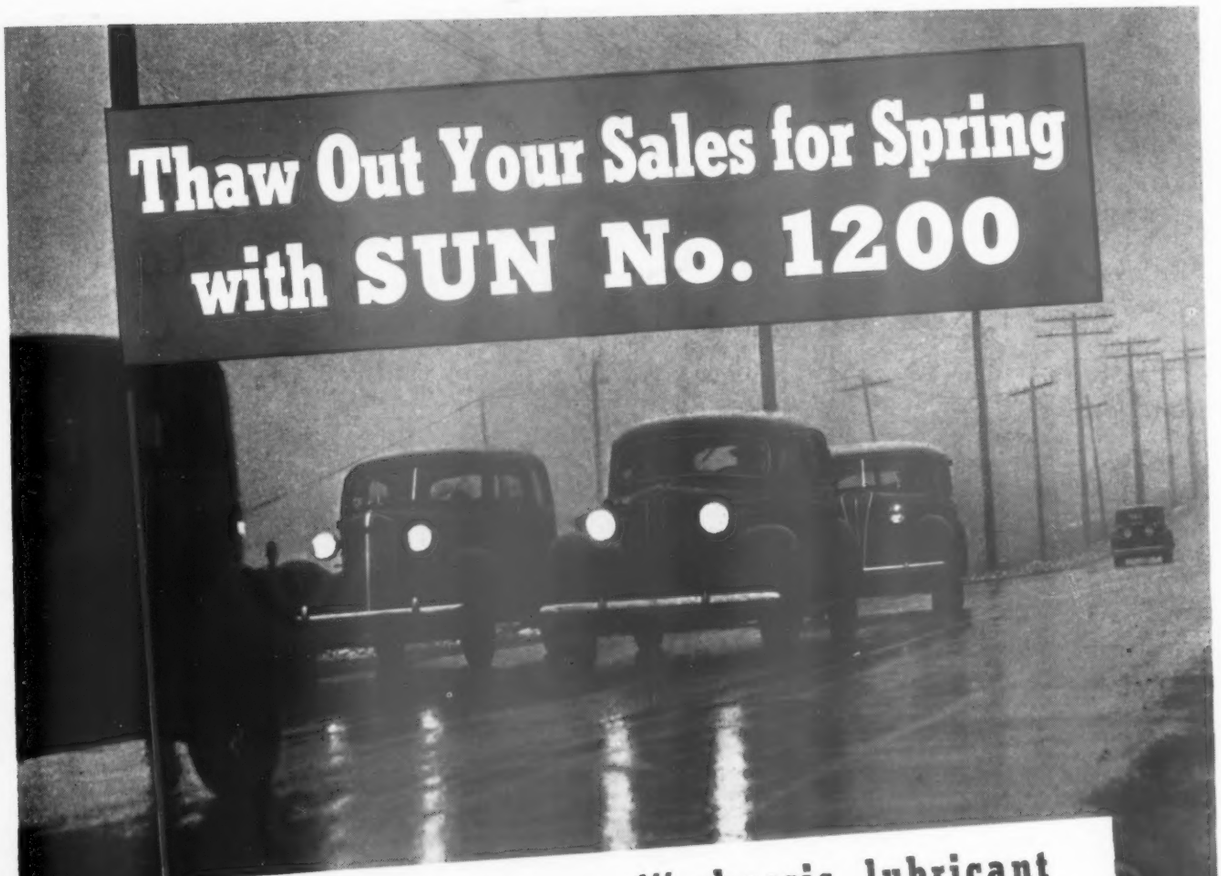
Yes, Champion Spark Plugs are certainly more vital than ever before —vital to our all-out war for victory —vital to our national car conservation program.

In the face of the *primary* and *vital* spark plug requirements of a nation at war, it is not exactly easy to meet, simultaneously, the unprecedented demands of a suddenly service-minded public. But Champion is making real strides in meeting this two-fold responsibility.

Furthermore, Champion Spark Plugs have never been higher in national and public esteem. Always openly admitted to have the highest possible quality standards, Champions today are logically sought in greater quantity than ever before, because this is a day when only the highest quality merchandise is acceptable to the public.

Looking forward to that day when the ultimate Victory will become a reality, Champion is continuing to advertise with dominant schedules, so that the name Champion will continue to be, as it is now, the first name in spark plugs. The value of such a policy, to the trade, is unmistakable to the farsighted dealer.

IT PAYS YOU WELL TO STOCK AND SELL—CHAMPIONS!



Thaw Out Your Sales for Spring with SUN No. 1200

The "washout-proof" chassis lubricant

It looks like a big season for grease sales ahead. With all motorists seeking to make their present cars last longer, lubrication jobs . . . and jobber sales . . . should jump!

There'll be stiff competition for this increased grease business . . . which is all the more reason why you should make sure of the quality of the lubricants you sell.

It's a good time to stock SUN NO. 1200 — the long-lasting, "washout-proof" chassis lubricant — tested and proved over years in actual performance runs. SUN NO. 1200

- WILL NOT WASH OUT
- WILL NOT SQUEEZE OUT UNDER PRESSURE
- WILL NOT DRY OUT IN THE HEAT AND DUST OF THE MONTHS AHEAD

Get ready now for the Spring sales thaw. Cash in on a flood of new business — and repeat business — with pre-tested, performance-proved SUN NO. 1200.

PUT YOUR TRADE NAME ON THESE OTHER QUALITY-PROVED LUBRICANTS, TOO

Transmission Lubricant
Pressure Lubricant
Motor Cup Grease
Extreme Pressure Lubricant
Steering Wheel Lubricant
Wheel Bearing Grease
Universal Joint Grease
Water Pump Grease

SUN OIL COMPANY • PHILADELPHIA

SUN COMPLETE LINE OF GREASES PRE-TESTED MORE THAN 70 TIMES

TECHNOLOGY DEPT.

NATIONAL PETROLEUM NEWS

Volume 34 | March 11, 1942 | Number 10

PUBLIC LIBRARY
MAR 12 1942
DETROIT

Oil Could Produce All Rubber Needed

WASHINGTON—Every military and civilian need for rubber tires could be taken care of with synthetic rubber from raw materials that could be supplied by the oil industry—if steel were made available for constructing the plants, according to an authoritative source here.

Only recently, the oil industry increased by 50% its objective as regards synthetic rubber. But, if given steel for the plants, the industry could provide for 800,000 tons—or even a million tons—of synthetic rubber annually. Page 3.

'Tire Confiscation' Arouses Motorists

WASHINGTON—Leon Henderson's talk of taking tires off of civilian cars and giving them to defense workers is disrupting tire conservation plans, says A.A.A. asking retraction. Page 9.

Four Madison Suits Dismissed By Stone

MADISON—Judge Stone has dismissed four more treble damage suits. One plaintiff's lawyer charged with "soliciting" cases on contingent fee basis. Page 4.

Oil's War Slogan

BULLETINS

JOBBER MARGINS

PEORIA—Illinois jobbers opening convention here March 10 adopted resolution asking OPA to "stabilize" tank wagon gasoline prices at 2.5c above OPA's "lowest of the low" tank car price.

* * *

USED TIRE CEILINGS

WASHINGTON — Maximum prices at which used tires and tubes—for both passenger cars and trucks—may be sold will become effective March 16 under terms of maximum price regulation 107 issued by Price Administrator Henderson on March 10. For price-fixing purposes, tires were divided into four categories, based upon wear.

* * *

CRUDE OUTPUT DOWN

NEW YORK—U. S. produced 81,300 bbls. less crude daily in week ended March 7 than in previous week, American Petroleum Institute reported March 10. Daily average production for week was 3,934,350 bbls. Most districts were down, but over half of total decline was accountable to a 42,000-bbl. drop in Texas.

* * *

FEDERAL OIL TAXES

WASHINGTON — Secretary Morgenthau estimates increased fiscal year 1943's additional revenue from higher excise taxes he proposes will yield $242,000,000 more on gasoline; $49,900,000 more on lubricating oil; $18,700,000 more on pipeline transportation. President Roosevelt estimated in his January budget message that present taxes would yield $385,400,000 on gasoline; $45,000,000 on lubricating oil; and $14,200,000 on pipeline transportation. Adding them up: $755,200,000.

Well—Why Not?

"Why not make ALL of our own rubber?" asks Editor Platt. It's a good question, but official Washington seems to have shrouded the answer in "paternalistic mystery". Still—is it a matter of steel? Or is it something else? We're old enough, now, to be told. Page 11.

Ickes Control Step Seen in California

CLEVELAND—Forging of final link in the Ickes "federal oil control" plan is seen in move to bottle up production from California wells not complying with OPC's conservation ideas. Page 3.

I. I. P. A. Meeting Chalks up Record

INDIANAPOLIS—Dr. John W. Frey, OPC's marketing director, warns of critical period ahead at biggest meeting in history of Indiana Independent Petroleum Assn. Page 17.

Treasury's Plans On Depletion Hit

WASHINGTON—Independent Petroleum Assn. of America hits Treasury Secretary Morgenthau's proposals to cut depletion allowance and charge intangible drilling costs to capital account as having been fostered by "misguided government officials". Page 13.

Ickes Tells Need For OPC's Quotas

OKLAHOMA CITY—Reasons behind Office of Petroleum Coordinator's crude production rates are explained by Co-ordinator Ickes in a letter to Oklahoma Corporation Commission. "Continuity of supply" is key to situation, he says. Page 13.

NEWS BRIEFS

WPB "refreezes" tank trucks, trailers and transports. Page 19.

* * *

ICC gives "green light" to conversion of tank cars. Page 19.

* * *

Tanker pooling plan for East Coast okayed by OPC. Page 21.

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Emphasis placed on spare truck parts in WPB program. Page 21.

* * *

Hopes for Texas-New York crude pipeline blasted again. Page 22.

* * *

Shift to trucks on short hauls grows in Mid-Continent. Page 22.

* * *

Mis-alignment will wear tires out 50% faster, NPN explains. Page 24.

* * *

Slight drop in tank car movement to East reported by OPC. Page 22.

* * *

Utah's governor promises aid to dealers hit by rationing. Page 16.

* * *

May centralize buying of U. S. oil needs in one agency. Page 5.

* * *

Lots of talk but no action yet on anti-trust in Washington. Page 8.

* * *

Canadian 'gas' ration cards ready for April 1 use. Page 4.

MERCHANDISING

War Booms Parking lot Business for Seattle Service Stations.. 27

How Mid-Western Jobbers Talk on Meeting Their War Problems. 32

MARKETS

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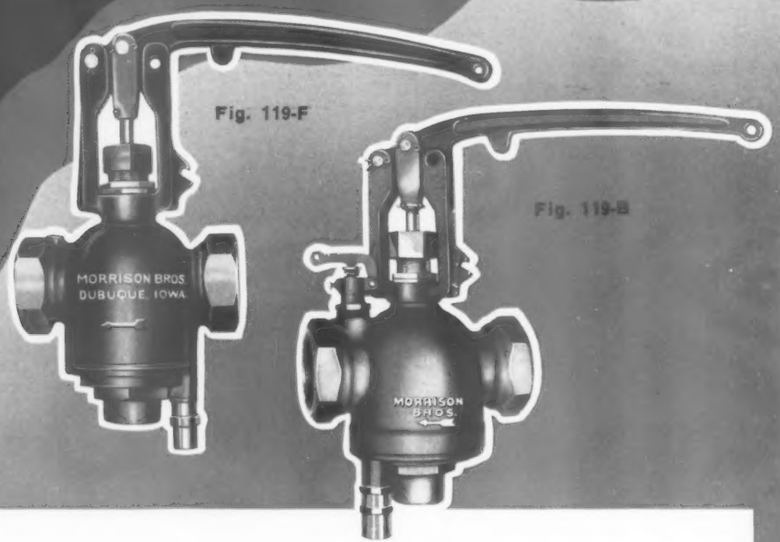
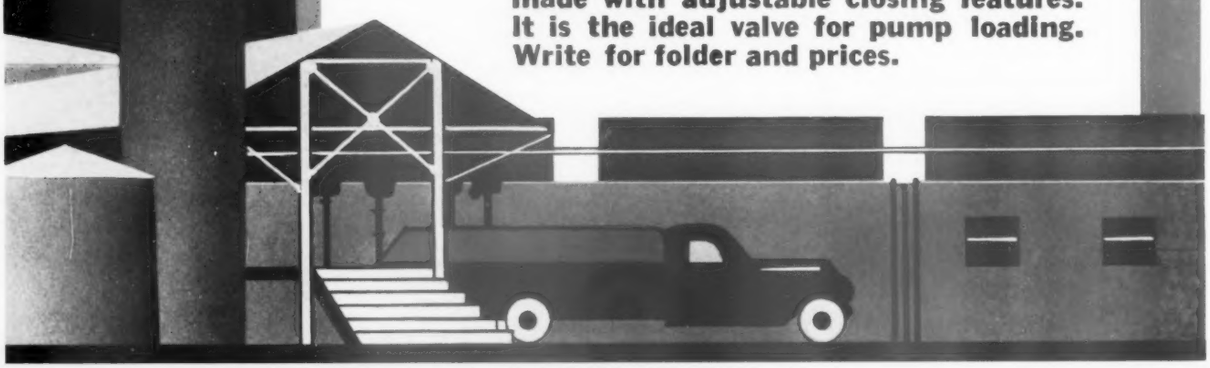
MORRISON SERVICE LOADING VALVES



The most important bulk plant appliance is the valve which loads the truck tanks. The Morrison Fig. 119 Series gives just that kind of a valve.

It is slow closing, but not too slow. It is always safe, sure and reliable.

The slow closing mechanism takes the jar and pound from overworked lines. It gives absolute protection for meter equipment. The valve is also made with adjustable closing features. It is the ideal valve for pump loading. Write for folder and prices.



MORRISON BROS. COMPANY

OIL EQUIPMENT HEADQUARTERS

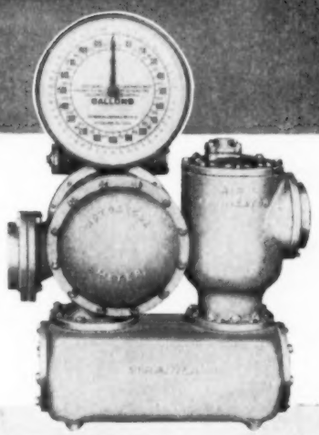
DUBUQUE, IOWA

THEY'RE IN THE NAVY NOW!

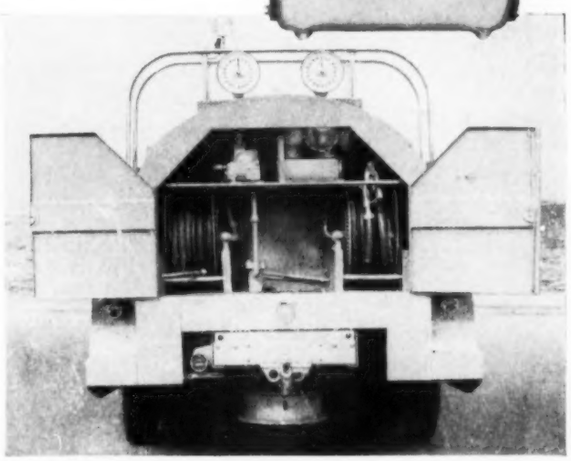
These U. S. Navy Air Service Tenders Are PITTSBURGH METER Equipped

THESE modern, streamlined U. S. Navy Air Service Tender units are unique in that meter-measured lubrication oil, as well as gasoline, is supplied from each truck.

Accurate, dependable measurement is accomplished through a dual meter installation using two types of Pittsburgh Meters, each of them chosen for its adaptability to the specific measuring need. The Pittsburgh Piston Meter, on the left in the close-up illustration, measures lubricating oil as it is dispensed—while the Pittsburgh Rotocycle Tank Truck Unit, on the right, measures the aviation gasoline supplied from the truck. The entire installation is extremely compact to conserve valuable space and is designed to provide speedy, accurate measurement. Note the extended registers assuring the utmost in visibility.



Pittsburgh Rotocycle Tank Truck Unit, Type T-2, with Vertical Dial Register



Throughout the country various types of Pittsburgh Meters, depending upon the particular class of service, are accurately measuring all kinds of petroleum products at airports. There's a Pittsburgh Meter for every kind of service. Since this company builds a complete line, purchasers of meters can be assured that the proper type will be recommended for their particular measurement problem.

PITTSBURGH EQUITABLE METER COMPANY

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THE WORLD'S LARGEST MANUFACTURER OF GASOLINE, OIL AND GREASE METERS

FOR PIT SERVICE, TOO

PITTSBURGH METER in Airport Gasoline Dispensing Unit for Underground Installation

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Ted Reinhardt

New President of Kansas Oil Men's Association

Ted Reinhardt, a thirty-nine-year-old Independent oil man who owns the Dixie Oil Co. at Salina, Kansas, is the new president of the Kansas Oil Men's Assn.—and he's one K.O.M.A. president who got into the jobbing business in reverse.

Usually, oil jobbers get their start by first owning a truck or two, and then drumming up some service station business. But Mr. Reinhardt, in 1932, leased two service stations in his home town and worked into the jobbing business from the opposite direction.

Born in Norwich, Kansas, in 1903, the new K.O.M.A. president spent the early part of his life in western Oklahoma where his parents moved when he was at an early age. But he returned soon to Kansas—in time to complete his education at Salina, where he went to work for the Missouri-Pacific Railway a few years later.

Mr. Reinhardt is Auxiliary Fire Chief for Civilian Defense, a Mason, Captain of Shrine Patrol of the Isis Temple; spends a large part of his spare time hunting and romping with his two young children, Jerry, nine, and Joyce, six.